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THE CANADIAN

ENTOMOLOGIST.

VOLUME I.

EDITED BY

THE REV C. J. S. BETHUNE, M.A.,

SECRETARY TO THE ENTOMOLOGICAL SOCIETY OF CANADA.

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ERRATA.

- Page 19, 7th line from bottom, for *Aretia*, read *Arctia*.
 " 6th " " *Coleopetra*, read *Coleoptera*.
 " 45, 10th " top constantly. read constant.
 " 87, 16th " " *Phesia*, read *Plusia*.
 " 92, 2nd " " *tæta*, read *læta*.
 " 3rd " " *Acadia*, read *Acadica*.

For other Errata, see page 84. Pages 44 to 50 are numbered improperly, they should be 46 to 52, respectively.

The Canadian Entomologist.

VOL. I.

TORONTO, AUGUST 1, 1868.

No. 1.

INTRODUCTORY.

For a long time the wielders of the Butterfly-net and Beetle-bottle in Canada have been longing for some medium of intercommunication—some mode of telling one another what they have taken, how and where they have taken it, and what they are in want of. This desire the Entomological Society purpose now to satisfy to some extent by the publication of the *Canadian Entomologist*. It is but a few years since the Society itself began as a little germ with a few members, and now we find it rapidly growing into a goodly tree with its main trunk in Toronto, its thriving branches in London and Quebec, and its scattered adherents all over the country. We trust that the success of this publication may be somewhat similar; it begins now with a few pages, a limited circulation, and a very small supply of the necessary funds, but we hope and believe, too confidently, perhaps, it may be—that it will by and by grow and increase, and acquire goodly dimensions, and become a handsome and valuable exponent of the progress of Entomological Science in this Dominion. May we beg, then, that all zealous Entomologists around us will come forward and assist the enterprise with at any rate their pens, if not always with their purses too!

And now for a word as to the proposed character and contents of the work. The *Canadian Entomologist* is intended to contain original papers on the classification, description, habits, and general history of Insects; the transactions of the Entomological Society of Canada; short notices of new works on Entomology; accounts of the capture of new or rare species in Canada; lists of specimens for exchange, and *desiderata*, by members; correspondence, and answers to correspondents; notices to members, and suitable advertisements. It will be published not oftener than once a month, and only when there is a sufficiency of suitable matter for publication; its terms are gratis to members of the Society; 50 cents per volume of 12 numbers to non-members; extra copies will be sold at the rate of five cents each, or fifty cents per dozen. Any contributions to the publication fund will be thankfully received and gratefully acknowledged.

All communications and remittances should be addressed to the Secretary-Treasurer of the Entomological Society of Canada—"THE REV. C. J. S. BETHUNE, CREDIT, ONTARIO, CANADA."

A LUMINOUS LARVA.

BY THE REV. C. J. S. BETHUNE, M.A.

On the 5th of July, a friend brought me a very remarkable Larva that he found in a field the previous evening, and which had attracted his attention by the light it emitted. When alive it was about an inch and a half in length, and 0.25 inch in width across the middle, its general appearance being long and narrow; it is flattened above, and composed of twelve segments (exclusive of the head); each segment is broad and cut squarely, and overlaps the following one, the posterior angles being a little acute; the anterior segment is gradually narrowed in front and rectilineally truncate, forming a shield to the head which is retractile within it; each of the first three segments has a pair of claw-like legs attached to it beneath. The general colour of the insect was a dark drab, the posterior angles of each segment, the softer connecting portion between the segments, and the under side of the body being very much paler, and of a somewhat dirty yellow hue; on each side there is a deeply impressed line in which the spiracles are situated. When seen in the dark the insect presented a very beautiful appearance, being apparently ringed and dotted with greenish fire. Each spiracle appeared to be a point of bright greenish light, and the division between each segment a line of the same colour; it looked, indeed, as if the whole insect were filled with fire, which shone out wherever it was not concealed by the dark shelly integument. When coiled up on its side it looked like a lovely Ammonite whose striæ emitted green light, and with a point of green fire in each interspace.

The morning after receiving the insect, I left home in order to attend the Annual Meeting of the Entomological Society at London, where the specimen attracted much attention; unfortunately I was unable to find out its proper food, (which I now fancy must have been snails and slugs), and when I reached home, ten days afterwards, the worm, to my great regret, was dead, and I have failed in rearing it. On comparing, however, Westwood's description and figure of the larva of the English Glow-worm (*Lampyrus noctiluca*), I cannot but think that my specimen is a closely allied species, and belongs at any rate to the family Lampyridæ. At the London Meeting it was mentioned that a similar luminous larva had been captured in that neighbourhood some years ago, but that nothing had been determined respecting it.

The chief point of interest in this case is the luminosity of a *Larva*. Everyone in this country is well acquainted with the light-giving powers of our common winged "Fire-flies," and most of us have seen specimens of the female apterous "Glow-worm" found in England; but that a larva should possess this singular property is a novelty to us all. On looking up various authorities I find that Westwood mentions that the males, pupæ, larvæ, and even the eggs of the English Glow-worm are slightly luminous; and Kirby and Spence refer to a few similar instances. The last mentioned authors (Letter xxv.) also give an account of the various theories respecting the origin of this light, to which we would refer our readers. Professor Croft, who examined my specimen at London, has since written to me as follows:—"Burmeister found the larva of *Lampyrus splendidula* phosphorescent—he does not say how. Treviranus seems to have found that the light-giving substance (whatever it is) is diffused throughout the whole body of the insect, and that the appearance of the light in the thorax of *Elater noctilucus*, and in the abdomen of the different species of *Lampyrus* is due to these special portions being composed of a fatty matter which allows the light to pass through. It is generally believed that the light-giving substance is Phosphorus or some compound thereof, the light being caused by the air supplied by the breathing apparatus. Now, if we allow this to be true, *i.e.* that the whole of the body of the insect becomes luminous under peculiar conditions, then, as your larva was composed of dark brown segments separated by lighter partitions, which apparently expanded as the heart moved, we can account for the very beautiful appearance it exhibited—the light shining through the paler or fatty-covered portions. It may perhaps be the larvæ of a *Lampyrus*."

Should any of our readers have met with similar larvæ, or be able to afford us any information on this interesting subject, we shall be very glad indeed to hear from them.

ENTOMOLOGICAL NOTES.

PAPER No. 1.

BY W. SAUNDERS, LONDON, ONTARIO.

On the morning of the 12th May, while rambling about on the edge of a wood near London, I happened to observe some chips from a newly felled tree strewn the ground. While turning them over in search of insects, the sight of an object I had never seen before excited my curiosity. It was the full grown larva of a butterfly—a *Polyommatus* or *Thecla*—I was not sure which. It had just stretched a silken thread across its body to aid in securing it to the spot selected in which to pass the chrysalis stage of its existence.

As soon as possible, with the help of a magnifying glass, I took the following description :—

Length 0.45 in., greatest width 0.20 in.—onisciform.

Body, above, dull rosy red, with a diffused yellowish tint on the sides, most distinct along the middle segments, and a dorsal line of a deeper shade of red. Body downy, with minute yellowish and brownish hair, scarcely visible without a magnifier.

On the 16th of May it changed to a chrysalis, and on the 28th the following description of it was taken :—

Length, 0.40 in., greatest width, nearly 0.20 in.

Color, pale, dull brownish red, with many black dots; a ventral streak of brown, dotted with black, with two diverging branches on anterior portion of body; a band of the same color across the base of the head, and a short cross line about midway between these. On each side of the body are three rows of black dots, one dot on each segment in each of the rows, the two upper ones extending from the 6th to the 11th segment inclusive—the lower one the whole length of body. Below these are a few additional black dots, very minute. Body thickly covered with very small brownish dots, and roughened with minute pale tubercles.

On the 3rd of June the chrysalis began to grow darker, and soon a reddish lustre shone through the thin membrane covering the wings; on the 5th the imago was produced, which proved to be *Polyommatus Americana*.

These observations seem to establish this point: that the insect passes the winter in the larva state, probably nearly full grown. The chrysalis period was no doubt prolonged in the present instance by being kept in a cool room.

Drasteria erecthea is one of our commonest moths—common almost everywhere. It is one of the earliest on the wing in spring, and specimens of the second brood may be found up to quite a late period in the autumn. It frequents open places on the grassy sides of railroad tracks, in fields and meadows, suddenly starting up before you and, after a short but rapid flight, as suddenly alighting.

About the middle of August I captured a female specimen and confined it in a pill box, where, a few days afterwards, I found it had deposited a number of eggs. These, in a short time, hatched, and from a number of different kinds of leaves, put in for the larva to feed on, they selected clover, on which they were easily reared. By the 21st of September they were full grown, in fact several specimens had already entered the chrysalis state. On that date the following description was taken :—

Length, 1.25 in. Body thickest along the middle segments, somewhat smaller towards head, but tapering much more towards posterior segments. Head medium sized, flattened in front, pale brown, with darker longitudinal lines.

Body, above, reddish brown, with many longitudinal lines and stripes of a somewhat darker shade. A double, whitish dorsal line, with a stripe on each side of the darker shade of brown; another stripe of the same hue close to stigmata, and between these are faint longitudinal lines. Spaces between segments from fifth to eighth, nearly black above; this, however, is only seen when the body is coiled up, which the larva readily does when disturbed.

Under surface slightly darker than upper, with many longitudinal lines of a still deeper shade, and a central stripe of blackish green from 6th to 9th segments; feet and prolegs greenish, semi-transparent, with faint lines, and dots of a darker shade.

This larva has only three pairs of prolegs, and in its movements resembles the true Geometer's. Early the following spring the chrysalides produced the imago.

During the summer of 1866, late in July or early in August, a female specimen of that very rare moth, *Arctia parthenos*, was captured by Mr. B. Billings, of Ottawa. While confined in a box it deposited a number of eggs, which, a few days afterwards, produced the young larva. These fed readily on lettuce and other herbaceous plants, so that they were reared without difficulty until they were about half or two-thirds grown. The season was now advanced, and they refused to eat any more. At this period of their growth it appears they hibernate for the winter, hiding in crevices, and under loose pieces of bark on trees, &c., and finish their growth the following spring. For want of circumstances favorable to their preservation many of them shrivelled up and died. Several specimens were sent to me to see if I could winter them, and from one of these the following description was taken:—

Length, 1.25 in., cylindrical. Head medium sized, bilobed, black and shining, with a few brownish hairs. Body, above, black, with transverse rows of shining tubercles, rather large, and of a dull, brownish-white color, excepting a few on anterior segments, which are black. From each tubercle arises a tuft of brown hair. The hairs on anterior segments and around the base of body are rather short, the others long, silky, of a slightly paler shade of brown, and extending backwards, overhanging the segments behind them. Stigmata elongated, and of a yellowish orange color.

Under surface black, with a slight brownish tinge; 5th, 6th, 11th and 12th segments, with a transverse row of black tubercles in continuation of those above, each emitting several short, dark brown hairs. Feet black, banded with whitish brown; prolegs black without, tipped with greenish brown.

I was unfortunate with my specimens; Mr. Billings was equally so. Mine were buried in a box, under the ground, thinking this would preserve them in a uniform state of moisture. When taken up in the spring, two of them

showed signs of life, but they soon dried up and died. By confining female specimens (especially such as are in a damaged condition) of our rarer moths in boxes eggs may often be obtained; and from these, with attention and care, the whole history of the species may be worked out.

NEW FLUID FOR PRESERVING LARVÆ, &c.

A cheap fluid for the satisfactory preservation of larvæ and other soft animal forms has long been a desideratum among naturalists. The following solutions, prepared by Prof. Verrill, and published by him in *Silliman's Journal*, have been found satisfactory for the preservation of both the colour and form, as well as the structure of larva, fishes, mollusks and leaves of plants:

SOLUTION A. 1; (which may be kept in wooden casks.)

Rock salt.....	40 oz.
Nitre (nitrate of potassa).....	4 oz.
Soft water.....	1 gallon.

This is the final solution in which all invertebrate animals must be preserved. A solution with double the amount of water may be kept, and called A. II; another, with three gallons of water, will be A. III.

SOLUTION B. 1.

Soft water.....	1 gallon.
Solution A. 1.....	1 quart.
Arseniate of potassa.....	1 oz.

Another solution, with double the amount of water, may be made, and called solution B. II.

To preserve insects with these solutions, they are placed first in solution B. I., but if the weather be cool it would be better to first employ B. II. If the specimens rise to the surface they should be kept under by mechanical means. After remaining for several hours, or a day (varying according to the size and the weather), in the B. I. solution, they may be transferred to A. III., and then successively to A. II. and A. I., and when thus fully preserved they may be transferred to a fresh portion of the last solution, which has been filtered clean and bright, and put up in a cabinet, when no further change will be necessary, if the bottle or other vessel be properly secured to prevent the escape of the fluid by crystallization around the opening. To prevent this, the stopper, whether of cork or glass, together with the neck of the bottle, may be covered with a solution of paraffine, or wax in turpentine, or benzole, which should be applied only when the surfaces are quite dry and clean. The length of time that any specimen should remain in each of the solutions is usually indicated by their sinking to the bottom when saturated with it. In many cases but two solutions below A. I. will be effectual.

ANNUAL GENERAL MEETING OF THE ENTOMOLOGICAL SOCIETY OF CANADA.

The Annual General Meeting of the Society was held, by invitation of the London Branch, in their rooms, City Hall, London, Ontario, on the 7th of July, at 3 p.m. The President, Professor Croft, occupied the chair, and the following members were present :—From Toronto, Messrs. Sangster, Clementi, Bethune, and Osler; from London, Messrs. Saunders, Reed, Barber, Griffiths, Puddicombe, Denton, Chapman, Waterman, and Simpson.

The Secretary-Treasurer read the Minutes of the last meeting, the Financial Report, and the Reports of the Quebec and Toronto Branches; on motion they were adopted as read. Letters of apology for non-attendance at the Meeting were read from various members who were unable to be present, and a communication respecting the 17th Annual Meeting of the American Association, to be held at Chicago, in August.

The Meeting then proceeded to the election of officers for the year 1868-9, with the following result :—

President—Professor Croft, D.C.L., University of Toronto.

Vice-President—Johnson Pettit, Esq., Grimsby; William Saunders, Esq., London.

Ex-officio, Vice-Presidents — Rev. O. Brunet, President, Quebec Branch; J. M. Denton, Esq., President, London Branch.

Secretary-Treasurer—Rev. C. J. S. Bethune, M.A., Credit, Ontario.

Curator—W. H. Ellis, Esq., B.A., Toronto.

Council—G. J. Bowles, Esq., Secretary, Quebec Branch; E. Baynes Reed, Esq., Secretary, London Branch; J. H. Sangster, Esq., M.D., Normal School, Toronto.

Several American Entomologists of note were then nominated for election as Honorary Members at the next meeting.

After some discussion a resolution was unanimously passed respecting the publication by the Society of a small periodical to be called the "CANADIAN ENTOMOLOGIST," under the editorial management of the present Secretary of the Society.

At 6 o'clock the meeting adjourned till 8 o'clock p.m., when the members proceeded to the examination, comparison, and discussion of Longicorn Coleoptera. Large and interesting collections of this family of insects were exhibited by Messrs. Saunders, Croft, Bethune, Reed, Sangster, and Clementi, representing nearly all the species enumerated in the Society's List as Canadian, and also a few not before taken in this country. A few Lepidoptera new to Canada, an interesting collection of Larvæ prepared by Mr. Saunders, many beautiful works on Entomology including Dr. Glover's unpublished plates of Lepidoptera, and other objects of interest were also exhibited; these together

with the microscope, pleasantly occupied the members for a few hours, when the meeting adjourned.

The following morning, Wednesday, July 8, the members met at 8.30, and drove a few miles into the country for an entomological field day and pic nic. On arriving at the selected place all betook themselves to the woods, fields and river side, and spent a few hours in the capture of insects of various orders; many rare and interesting specimens were taken, and fair success was attained by all. At mid-day they re-assembled for lunch, which was kindly provided by the London members; and, after it had been duly discussed and enjoyed, another sally was made upon the insects of the neighborhood, till the time of departure arrived. Two photographs of the members, in a group, were taken by Mr. Griffiths, as a memento of this first pleasant gathering under the new constitution.

In the evening, the members re-assembled at the residence of Mr. Saunders, and spent a few hours very agreeably with the microscope and in the examination of his large and beautiful collection.

The next day, Thursday, a few of the members made an excursion to "The Ponds," a few miles south of London, and captured a number of very interesting specimens, including several of *Polyommatus epixanthe*, which abounds in that particular locality. This brought to a close a most agreeable re-union of the members of the Society, which will long be remembered by all who took part in it. The members from a distance all expressed themselves highly delighted with the unbounded hospitality and kindness of their London friends.



EXCHANGES.

I have about 100 good specimens of *Melitæa phæton*, which I wish to exchange for any of the species of *Papilio*, *Pieris protodice*, *Grapta interrogationis*, any of the *Lycenidæ* (except *phleas*) and *Deiopeia bella*. I have an abundance of many of our common butterflies, mostly good specimens, collected in season, and by the end of August I hope to have a pretty heavy stock on hand for exchange.—B. BILLINGS, Ottawa, Ont.



Mr. PECK, of New York, desires to obtain good specimens of the following: *Pieris rapæ*, *Malitæa Harrisii* and *Nycteis*, *Chionobas balder*, *Thecla mopsus*, *augustus*, *acadica*, and *læta*, *Polyom*, *porsenna*, and *lucia*, *Lycæna Chlotilde*, *Hesperia* (various species), *Arctia*, *Catocala*, &c.; for these, good specimens of U. States *Lepidoptera* will be given.—Apply to the Rev. C.J.S. BETHUNE, Credit, Ont.

The Canadian Entomologist.

VOL. I. TORONTO, SEPTEMBER 15, 1868. No. 2.

NOTES ON CANADIAN LEPIDOPTERA.

BY THE EDITOR.

Two lists of Canadian Lepidoptera have been published by our Entomological Society; the first one, prepared by Mr. W. Saunders and issued in 1864, contained the names of all the Butterflies, Sphinges, and Bombyces then known to inhabit this country; the next year a second list, prepared by ourselves, was issued, containing the names of species in the remaining families of moths, and some additions to the former list. Since then a number of new species have been captured in this country, whose names may now be added to our lists; great changes have also been made in the generic nomenclature of others, and in some cases the very species has been proved to be erroneous and to require correction. On these grounds it is necessary that the lists should be revised and corrected preparatory to the publication of new ones at some future period; this we now propose doing as far as our own materials extend, trusting that others will lend their assistance and make the corrections and additions as complete as possible. With regard to the substitution of new generic names, while we make the alterations in order that we may not be "behind the times," we yet cannot but think that this endless splitting up of old and well known genera into numberless new ones is a serious drawback to the study of entomology. At the present rate we shall soon have a separate genus for each species, as is already very nearly the case in some families, further than which sub-division can hardly go.

1. ARGYNNIS ATLANTIS, Edwards.—This beautiful butterfly, which somewhat resembles our well-known *A. aphrodite*, is figured in Mr. Edwards' magnificent new work on the "Butterflies of North America." He states that "it is found in the mountainous districts of New York, and in British America at least as far north as Rupert's House, Hudson's Bay, and Lake Winnipeg." It was taken by Mr. Saunders, below Quebec, in 1866.

2. CHIONOBAS JUTTA, Möschler.—Mr. Scudder, in his revision of this genus (Pro. Ent. Soc. Phil. v. 3-5), states that this name should be substituted for *C. balder*, Bois. & Lec., which is on our first list. It has been taken in the neighbourhood of Quebec.

3. *THECLA STRIGOSA*, Harris, Ins. Mass. p. 276.—Mr. Saunders has succeeded in raising this insect from the larva, which fed on thorn.

4. *THECLA CALANUS*, Westwood.—Messrs. Grote & Robinson in the Trans. Am. Ent. Soc. i. 172-3, state that they "have the male *T. calanus* from Canada, under the, they believe, unpublished name of *T. Edwardsii*, Saunders;" they consider that *T. fulacer*, as described by Harris, should probably be referred to this species,—Godart's species, as illustrated by Boisduval and Leconte, not corresponding to it.

5. *THECLA INORATA*, Grote & Rob.—These writers in a later part of the Trans. Am. Ent. Soc. (i. 323), describe *T. fulacer* of Boisd & Leconte's plate as a new species under the above name, and state that the *T. Fulacer* of Godt. and Boisd. and Lee., text, is *T. calanus*. Both species have been taken in Canada. All our own specimens which we had labelled *T. fulacer* are *T. inorata* G. & R.

6. *LYCÆNA PEMBINA*, Edwards.—Taken by Mr. Saunders at Cacouna in 1866 (*vide* his paper).

7. *LEPISIESIA FLAVOFASCIATA*, Walk.—Described by Walker under the genus *Macroglossa* (C. B. M. viii. 87), but erected by Mr. Grote into a new genus as above (Pro. Ent. Soc. Phil. v. 39). Specimens of this insect taken in Canada are in the collection of the Ent. Soc. Phil.

8. *HÆMORRHAGIA GRACILIS*, Grote & Rob.—Described from specimens obtained by Mr. Saunders in Canada West (Pro. E. S. Phil. v. 175, pl. 3, figs. 1 and 2).

9. *HÆMORRHAGIA THYSE*, Fab.—This is on our list as *Sesia pelasgus*, Cram.; the specific name of *Fabricius* has the priority, while the new generic name is given by Grote & Robinson to this and three other species, the genus *Sesia* being by them restricted to *S. diffinis*.

10. *AELLOPOS TANTALUS*, Linn.—In our list as a *Macroglossa*, placed under Hübner's genus by Grote (Pro. E. S. Phil. v. 42). Our specimen, a somewhat mutilated one, was taken by Mr. Pettit at Grimsby in 1864; we have never heard of any other being taken so far north.

11. *THYREUS ABBOTII*, Swains.—This handsome insect has been captured at Hamilton, Ont.

12. *AMPHION NESSUS*, Cram.—In our list as a *Thyreus*, belongs to Hübner's genus *Amphion*.

13. *OTUS CHÆRILUS*, Cram.—Hübner's generic name has here also priority over the name *Darapsa*.

14. *OTUS MYRON*, Cram.—In our list *Darapsa pampinatrix*, Smith. Cramer's specific name has priority over Smith's.

15. *OTUS VERSICOLOR*, Harris.—Removed from *Darapsa* to this genus (Grote Pro. E. S. Phil. v. 81).

16. *PHILAMPELUS PANDORUS*, Walk. (*P. satellitia*, Harris.)—*Satellitia* Linn., is a South American species, and not that figured by Harris (*vide* Grote & Rob. Trans. Am. E. S. ii. 76). This magnificent Sphinx was captured in 1866 by the Rev. V. Clementi at Lakefield, North Douro, Ont., as it has been taken so far north it is likely to occur in other parts of the country where the grape is cultivated.

(To be continued.)

ENTOMOLOGICAL NOTES DURING A TRIP TO SAGUENAY.

BY W. SAUNDERS.

During the summer of 1866 we found ourselves among those who were trying to escape the hot weather of July by a trip to the Saguenay. The few hasty notes of insects taken during this journey must necessarily be very imperfect, since a day or two at most was all the time that could be devoted to any one locality.

During the down trip there were no opportunities for entomological observations. On the evening of July 10th we reached the mouth of the Saguenay, and early on the following morning the steamer *Magnet* landed us at Ha Ha Bay. I was surprised to find that *Pieris rapæ*, so lately introduced into Quebec from Europe had found its way so far down as this, it was the commonest butterfly here. During a twelve miles journey across the country to Chicoutimi it still prevailed, flying about the gardens and cultivated fields—in no great abundance anywhere, but commoner than any other species. How much further north it extended I was not able to ascertain.

After spending two days in this neighbourhood we returned on the third to Tadousac and from thence to Cacouna, remaining two or three days in each place. The following list embraces all the species observed, with localities:

Papilio turnus, Linn.—Tadousac, not uncommon.

“ *asterias*, Fab.—This insect was not seen on the wing, but two specimens of the full grown larva were taken at Cacouna.

Pieris rapæ, Linn.—Ha Ha Bay, Chicoutimi, Cacouna, common. It is rather remarkable that this insect was not seen at all in Tadousac.

Colias philodice, Godt.—Tadousac, common. Cacouna not so plentiful.

Argynnis atlantis, Edwards.—Cacouna, rather common, but very wild and difficult to capture.

Argynnis myrina, Cram.—Cacouna, abundant.

Melitæa Harrisii, Scud.—Ha Ha Bay.

“ *tharos*, Cram.—Ha Ha Bay, Cacouna, common.

Vanessa Milberti, Encyc.—Ha Ha Bay.

Pyrameis cardui, Linn.—Cacouna.

Lycæna pembina, Edwards.—Two specimens of this rare insect were taken at Cacouna on the 19th of July, one in tolerably good order, the other much beaten. At the same time a larva was taken feeding on a blue vetch, very abundant there (*vicia cracca*), which I strongly suspect to be the larva of this species. Several specimens were secured, but a series of mishaps prevented my rearing any of them. I append a description, with the hope that some entomologist may before long meet with it again.

Length 0.50 in., onisciform.

Head very small, brownish black, drawn within the second segment when at rest.

Body above delicate pink or flesh color, thickly covered with very short fine pink hairs scarcely visible without a magnifying glass, a brownish red dorsal line from third to terminal segments, widest and darkest on anterior segments. Second segment pinkish anteriorly, with a patch of dull green behind just in front of the dark dorsal line on third segment. On each side are eight short brownish red lines, those on third and fourth segments being placed nearly parallel with the dorsal line, those behind extending obliquely down the sides and edged above with dull white. A lateral line of dull white close to under surface extending on each side from third to terminal segments, fainter on anterior segments.

Under surface greenish along the middle bordered with pink, which shades gradually into a pinkish red line, lying close to the white one which forms the boundary of upper surface; feet greenish faintly tipped with brown; prolegs green.

Specimens less than half grown have a decidedly greenish tint, with a dark reddish brown dorsal line; the lateral lines with that close to under surface are of a whitish green with a tinge of yellow; under surface dark green with a brownish red line underlying the greenish white one which borders the upper surface.

Half grown specimens are pinkish with a tint of green, as they grow older they gradually assume the delicate pink of the full grown specimen.

Polyommatus Americana, D'urban.—Cacouna.

Nisoniades persius, Scud.—Ha Ha Bay.

Hesperia mystic, Edwards.—Ha Ha Bay, Cacouna.

Alypia Langtonii, Couper.—Cacouna.

Ctenucha virginica, Charp.—Ha Ha Bay.

Spilosoma Virginica, Fab.—Ha Ha Bay.

Saturnia polyphemus, Fab.—Ha Ha Bay.

Crocota ferruginosa, Walk.—Cacouna.

Agrotis suffusa, W. Verz.—Ha Ha Bay.

Ennychia octo-maculata, Linn.—Cacouna.

Angerona crocatoria, Guen.—Ha Ha Bay.

Corycia albata, Guen.—Cacouna.

Melanippe gothicata, Guen.—Abundant between Ha Ha Bay and Chicoutimi, common also at Tadousac and Cacouna.

Scotosia undulata, Linn.—Tadousac, Cacouna.

Besides these about twenty-five undetermined species were taken, chiefly small moths.

COLEOPTERA.

Cicindela longilabris, Say.—On the road from Ha Ha Bay to Chicoutimi.

“ *limbalis*, Lec.—Taken along with *longilabris*.

I did not anticipate the occurrence of this insect here. The only locality I knew for it before was at Port Stanley on Lake Erie, and I did not imagine it had so wide a range.

Cicindela vulgaris, Say.—Tadousac, Cacouna.

Notiophilus 9 *striatus*, Lec.—This interesting little insect was taken at Tadousac on the ground on the highest part of a pass through the hills, and a short cut from the wharf to the hotel.

Harpalus herbivagus, Say.—Cacouna.

Trichius piger, Fabr.—Ha Ha Bay.

Ancylochira nuttalli, Kirby.—Ha Ha Bay.

Melanophila longipes, Say.—Ha Ha Bay.

Upis ceramboides, Linn.—Ha Ha Bay.

Hylobius pales, Herbet.—Ha Ha Bay.

Attelabus analis, Illig.—Cacouna.

Clytus undulatus, Say.—Ha Ha Bay.

Monohammus scutellatus, Say.—Common everywhere.

Acmaeops proteus, Kirby.—Ha Ha Bay.

Leptura nigrella, Say.—Ha Ha Bay.

Leptura 8 *notata*, Say.—On road to Chicoutimi.

Galeruca rufosanguinea, Say.—Ha Ha Bay.

Chrysomela polygoni, Linn.—Ha Ha Bay.

In addition a few species still undetermined, and a few insects belonging to other orders, including

Bombus borealis.—Cacouna.

Diplax assimilata, Uhler.—Cacouna.

Eysacoris carnifex.—Ha Ha Bay.

Capsus 4 *vittatus*.—Ha Ha Bay.

THE LUMINOUS LARVA.

Respecting our notice of this singular insect in our first number the Rev J. G. Morris, D.D., of Baltimore, Md., writes as follows:—"Judging from your description precisely a similar larva was brought to me a few years ago for investigation. As it belonged to a public museum I could not retain it for daily observation and feeding, neither had I time to go and watch its habits. I presumed, however, that it was full fed and would soon change. A few days after I went to make enquiry and was told that the bottle with earth had been thrown out, and on further asking they told me "the worm wasn't there any longer;" on pressing my questions the stupid fellow said that "there was a ball of earth almost as round as a marble, which he had not seen before, in the glass jar, but not knowing what it was he had emptied the whole concern into the street!" I have no doubt that the ball was the work of the larva in which it had enclosed itself, but it was irrecoverably lost. I made no description of the insect, but yours suits it precisely. Do the *Lampyridæ* cover themselves with dirt, as the *Geotrupidæ*, for example, in undergoing their transformation? If so, then we have one presumptive proof that the larva belonged to that family, but it is best not to be too rash in our conclusions. I very much regret that I can give you no more satisfactory information."

A few days ago (Sept. 3) we had the great good fortune to find a wingless female Fire-fly, whose tail segments were luminous. We must defer an account of it for the present.

NOTICE OF ENTOMOLOGICAL WORKS.

THE AMERICAN ENTOMOLOGIST. Edited by B. D. Walsh and C. V. Riley.

Published monthly by R. P. Studley & Co., 104 Olive Street, St. Louis, Mo. September, 1868.

The first number of a new periodical on practical entomology, edited by the State entomologists of Illinois and Missouri, is now before us. We gladly welcome its advent as a worthy successor to our old friend the *Practical Entomologist*, whose discontinuance was a source of much regret to us, and trust that it may long continue to flourish as a worthy and useful exponent of the true history and habits of the myriad insect friends and foes to the gardeners and farmers of this continent. Time was when to be an entomologist was to render oneself a source of anxiety and care to one's friends, and an object of pity or derision to one's neighbours; but now, happily, people in general are becoming rather more enlightened, and do not think that a man has a bee in his bonnet because he catches butterflies; is it because they find that

insects draw so largely upon their pockets, and devastate their fields and gardens if not looked after and repressed? That they do abstract annually enormous sums from the wealth of the country, our editors show us plainly in their opening article; they state, and we do not suppose they are far wrong, that the United States lose \$300,000,000 per annum by the depredations of noxious insects! Their object in issuing this new periodical is to shew the people how to save a small proportion, at any rate, of this vast sum, and teach them how to fight with the best prospect of success their tiny but countless foes. The official position of these gentlemen, as well as their various published writings, are a sufficient guarantee for the character and usefulness of their journal; the hearty coöperation of the public is all that is needed for its success. The number before us consists of twenty large octavo pages; it is written in a clear and lively style, and is illustrated by nine excellent woodcuts. It is to be published once a month, and will be profusely illustrated by original drawings from the pen of Mr. Riley, and at least one colored lithographic plate will be given with each volume. For the convenience of subscribers in Canada we have consented to act as agent for this Province; on receipt of one dollar we shall furnish it, *free of Canadian and American postage*, for one year—the difference of exchange covering the postage on both sides of the line. The title, *American Entomologist*, should be particularly mentioned to prevent any confusion with our own publication.

BOOKS RECEIVED:—*On the Development of a Dragon Fly (Diplax)*, and *On the Structure of the Ovipositor and Homologous Parts in the Male Insect*. By A. S. Packard, jun., M.D. From the Pro. Soc. Nat. Hist. Boston, 1868.

The author will please accept our thanks for the copy of these valuable papers that he has kindly sent us.

The Maine Farmer. Augusta, Me., Sept. 3, 1868.

TO CORRESPONDENTS.

M. S. R., Wooler, Ont.—Your name will be submitted for election as an ordinary member of the Entomological Society of Canada at the next meeting. The best works that we can recommend to you to begin with are Packard's *Guide to the Study of Insects*, now being published in parts at 50 cts. each, and Harris' *Insects Injurious to Vegetation*; other works, of course, will be required as you go on. As a general introduction to the study, you should read Kirby and Spence's *Entomology*, a valuable and highly entertaining work to any one who cares at all for natural history. We shall be happy to procure Dr. Packard's work for you if you desire it; two parts are now published.

B. B., Ottawa; J. N., Belleville; J. R., Montreal.—A large supply of sheet cork has been ordered from England; we expect its arrival about the middle of next

month; till then we pray your patience. We have still several thousand pins left of Nos. 2, 3 & 4.

C. Wallbridge, Belleville.—The specimens left by you at the Canadian Institute some little time ago are the following: The large moth is the American Silkworm, or Eyed Emperor (*Telea polyphemus*); a full account by L. Trouvelot of its habits, transformations, and the most successful mode of rearing it, is contained in the *American Naturalist*, Vol. i., Nos. 1, 2 & 3; there is also a short notice of it, with a figure of the moth, in the *Canada Farmer*, 1866, p. 181. The gigantic water-fly is a fine male specimen of the Horned Corydalis (*C. cornutus*); its larva is commonly called a "Crawler," in the Western States a "Hellgramite,"—whatever that means—and is a capital bait for bass, etc.; there is an illustration and notice of it in the current number of the *Canada Farmer*. The smaller water-fly is a species of *Perla*, often found in the earlier part of summer, fluttering about the banks of rivers, and settling on stones, aquatic plants, or any other convenient resting-place. Its larva lives in the water, generally hiding itself under stones, and feeds upon small insects; it exists through the winter, and changes to a pupa in the Spring; before assuming the winged state it crawls out of the water and leaves its empty case behind when it flies away to enjoy its brief life in the air; the empty shells are often to be found on bridges and the margins of streams. We shall be happy to receive specimens from you at any time.

SUBSCRIPTIONS to Vol. I. have been received, with thanks, from the following:—Rev. Dr. G., Wellington Square; T. P., Berlin, Ont.; Rev. F. A., Guelph; Prof. H. Y. H. and D. H. H., Windsor, N. S.; V. S. C., Covington, Ky.; S. H. S., Boston, Mass., who kindly writes, "Please put my name down for a copy of the CANADIAN ENTOMOLOGIST—even if it is to be published at \$5 per volume." We have also received the following subscriptions to Vol. I. through Mr. Saunders:—L. S., D. H. M., and Judge L., Hamilton. D. W. B., St. Catharines; C. A., Paris, Ont.; A. M. S., Grimsby.

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Suitable advertisements will be inserted on reasonable terms.

N.B.—Correspondence is invited respecting the habits, localities, occurrence, etc., of insects, as this journal is intended to be a medium for the recording of observations made in all parts of the country; insects for identification will be gladly attended to and returned when desired. Any contributions to the publication fund will be thankfully received and gratefully acknowledged.

All communications, remittances and exchanges, should be addressed to "THE REV. C. J. S. BETHUNE, *Credit, Ont., Canada.*"

The Canadian Entomologist.

VOL. I. TORONTO, OCTOBER 15, 1868. No. 3.

NOTES ON CANADIAN LEPIDOPTERA.

BY THE EDITOR.

(Continued from page 11.)

17. *CRESSONIA JUGLANDIS*, Smith.—This well-known insect has been taken as the type of a new genus, worthily dedicated to Mr. E. T. Cresson, Philadelphia, by Messrs. Grote & Robinson (Pro. E. S. Phil. v. 186). Its structural differences from the other species of *Smerinthus* appear to fully warrant its separation from them.

18. *MACROSILA QUINQUEMACULATA*, Haw.—The transference of this and several other American species to Boisduval's genus from that of *Sphinx* was made by Walker (C. B. M. viii. 198), and has since been concurred in by Clemens and Grote.

19. *DAREMMA UNDULOSA*, Walk.—This species has given rise to an extraordinary amount of confusion and difficulty. Mr. Walker himself has stated (*vide* Pro. E. S. Phil. v. 189), that "this species is a mistake; it has been newly identified as a dwarfed and slightly aberrant specimen of *Sphinx brontes*." The specimens, however, from which he described his *M. brontes*, Drury, "differ much from Drury's figure, and may be a distinct species" (C. B. M. viii. 199); they have since proved to be Dr. Clemens' *Ceratomia repentinus*, which insect Grote & Rob. consider structurally distinct from the other species of *Ceratomia*. The question now is, what name is this unfortunate insect to bear? The last named authors (Trans. E. S. ii. 76) go back to *Daremma undulosa*; with all due deference we should say *D. repentinus* would be the more just designation, being Walker's genus and Clemens' species.

20. *CERATOMIA AMYNTOR*, Hübn.—This specific name appears to have the priority over Harris' *C. quadricornis*.

21. *SPHINX EREMITUS*, Hübn.—This is the *S. sordida* of Harris; the former name has the priority.

22. *SPHINX CHERSIS*, Hübn.—The *S. cinerea* of Harris.

23. *ELLEMA HARRISII*, Clemens.—This is the *Sphinx coniferarum* of Harris, who erroneously considered it to be Smith's species. We have a male specimen from London, Ont., and a female from Weston, Ont.

24. *LAPARA BOMBYCOIDES*, Walk.—This insect, which is very briefly described by Mr. Walker (C. B. M. viii, 233), and noticed as having been taken in Canada, is not mentioned by either Clemens or Grote; as the typical specimen is in a private collection it will be difficult to determine it or ascertain its specific value.

25. *TROCHILUM CAUDATUM*, Harris.—This singular and beautiful insect we captured in our garden at Credit last summer; we have never seen but one specimen.

26. *THYRIS VITRINA*, Boisd.—This name is to be omitted from our List No. 2; it was inserted on the authority of Mr. Walker (C. B. M. viii. 73), but Grote & Rob. (Trans. Am. Ent. Soc. ii. 75) have shewn that it is an erroneous determination of *T. maculata*, Harris.

We now proceed to the Bombycidæ, in which we adopt the order and revised nomenclature put forth by Dr. A. S. Packard, jun., in his valuable synopsis of this family (Pro. Ent. Soc. Phil. iii. 97-130, and 331-396).

27. *GNOPHRIA VITTATA*, Harris.—A synonym of *Hypoprepia fucosa*, Hübn (*Lithosia miniata*, Kirby), and therefore to be omitted from the list; the great difference in colour between the two varieties led us to think for some time with Harris, Clemens and Fitch, that there were two species.

28. *EUPHANESSA MENDICA*, Walk.—This species, which was included by Walker and others in the genus *Nudaria*, has been erected into a new genus, by Dr. Packard (P. E. S. Phil. iii. 102) upon satisfactory grounds.

29. *CROCOTA RUBICUNDARIA*, Hübn.—Grote & Rob. state (Trans. E. S. ii. 71) that the specimens referred by Walker to this species, are varieties of his *C. ferruginosa*; this statement is corroborated by Dr. Packard's account of the extreme variableness of the latter species (P. E. S. Phil. iii. 104). The name must therefore be omitted from our list until Hübner's species is satisfactorily shown to have been taken in Canada.

30. *UTETHEISA BELLA*, Hübn.—This lovely little moth which was formerly known by the hard-to-be-pronounced name of *Deiopeia bella*, is now referred to Hübner's not much more euphonious name, his genus having the priority over Westwood's.

31. *CALLIUMORPHA CLYMENE*, Esper.—In our list as a *Hypercompa*, which, it appears, was not intended by Hübner as the name of a genus, but of a group of genera.

(To be continued.)

A VISIT TO AMHERSTBURG, ONTARIO.

BY E. B. REED, LONDON, ONT.

Being recently on a visit to this pretty little frontier town, I devoted a few hours to my friends the resident Coleoptera and Lepidoptera, and well indeed were my labours rewarded, as the sequel will show. The season was rather advanced for Lepidoptera, but there must have been an enormous supply of their larvæ, for I noticed the fatal results of their "grubbing" powers on many of the surrounding trees; oaks, maples, hickory and walnut in particular, were filled with larvæ of *Dryocampa senatoria*, *D. stigma*, *D. rubicunda*, *Halesidota caryæ*, *H. tessellaris*, and a variety of species unknown to me by name, though we have taken several similar ones near London, but have failed to rear them.

Hearing that a lady in the town had a few specimens, I obtained an introduction from a mutual friend, and soon was busy at work upon the odds and ends of a most miscellaneous collection. Imagine my delight upon recognizing that magnificent insect, *Papilio thoas*! I was told that it was quite common there, and was made the lucky possessor of a fine specimen captured the week before, and I hope next season to procure a good supply of this rare insect. I also saw a very handsome Sphinx, *Chærocampa tersa*, caught on the vines in a neighbouring garden, and a splendid specimen of *Catocala cara*, both of which species I am inclined to think are hitherto unrecorded as taken in Canada. From this collection I obtained a specimen of those rather uncommon beetles *Xyloryctes satyrus* and *Saperda cretata*, captured at Paris, Ont.; I also took several moths, new to me, and shall endeavour shortly to procure their names. I do not know whether other localities were visited in the same way, but Amherstburg seemed literally to swarm with *Danaïs archippus*, reminding me of a similar occurrence in Toronto about seven years ago. From all appearances a rich harvest might be reaped by an energetic collector in this hitherto ungleaned field.

The following were obtained by me:—Lepidoptera—*P. asterias*, *P. turnus*, *P. oleracea*, *P. protodice*, *C. philodice*, *D. archippus*, *V. milberti*, *V. progne*, *L. disippus*, *A. cybele*, *M. tharos*; *Catocala amatrix*, *C. parta*, *Aretia Saundersii*, *A. phalerata*, and several of the Noctuidæ not yet determined by me through want of leisure. Coleoptera—*Pelidnota punctata*, *Clerus nigripes*, *Leptura Canadensis*, *Saperda vestita*, *Ligyris relictus*, *Clytus campestris*, *Cassida pallida*, *Hippodamia maculata*, *Chrysomela Bigsbyana*, *Diabrotica vittata*, *Macrobasis Fabricii*, several *Graphisuri*, and a most wonderful Curculio with a very alarming snout longer than its body, and the thickness of a horse-hair, belonging, I believe, to the genus

Balaninus ; and lastly two new *Chrysomelidae*. I should have been greatly pleased if I could have spared more time in investigating this fine ground, but the weather was not very favourable, and my time was limited.

DESCRIPTION OF THE LARVA OF CALLIMORPHA LECONTEI,

Taken June 10th, 1868, feeding on Horse Gentian (*Triosteum perfoliatum*).

Length, 1.10 in., nearly cylindrical.

Head rather small, bilobed, black and shining, with a few short hairs, mandibles black, palpi pale brown tipped with black.

Body above black, with transverse rows of elevated shining black tubercles, from each of which arises a spreading tuft of short bristly hairs ; a bright yellow dorsal stripe, and a wide band of the same color on each side, this latter intersected with streaks and centered with a broken band of black ; about half-way between the dorsal and lateral stripes is a row of pale whitish dots, forming a faint broken line.

Under surface dirty greyish white, with streaks and dots of brown, feet black, prolegs dirty white on inside, with a patch of shining black on the outside of each.

These larva entered the chrysalis state on the 19th and 20th of June, and produced the imago on the 12th and 14th of July. Four specimens were reared, and the moths were as nearly alike as possible, showing no tendency to the remarkable variations attached to this species.—W. SAUNDERS, London, Ontario.

DESCRIPTION OF A LARVA FOUND INFESTING THE SEED OF THE GRAPE.

In the last number of the *Canada Farmer* will be found as full an account as we can yet give of the history and distribution of this insect which threatens to interfere seriously with the culture of the grape in some parts of our country. As there stated, it is probably the larva of a small species of curculio. Knowing that accurate scientific descriptions of such insects are scarcely suitable for a popular agricultural paper, I have referred the readers of *The Farmer*, who wish to pursue the subject further, to the present number of *The Entomologist*.

Usual length about one-twelfth of an inch, greatest width about one-third of the length.

Head rather small, smooth, whitish, semi-transparent ; mandibles hook-like and sharp pointed, dark brown, with a patch of brown at their base.

Body above and below milk-white, semi-transparent, with a shining surface, distinctly annulated, widest along the middle segments, tapering towards

each end. The hinder edge of each segment is raised as if slightly overlapping the one behind it. Each segment has several short whitish hairs, only visible with a high magnifying power; these are most numerous on anterior segments. The two hinder segments are smaller than any of those on anterior part of body, feet and prolegs wanting.

The larva is very sluggish in its habits, and will often remain a long time motionless unless disturbed.—W. SAUNDERS, London, Ont.

MISCELLANEOUS NOTES.

A NEW *THECLA*.—In July last, while staying at Port Stanley, Ont., I captured a *Thecla* on the common garden Spiræa; at first sight I supposed it to be only *T. Falacer*, but on closer examination, when setting it up, I discovered some new points which, in my opinion, marked it as a fresh addition to our Canadian list. I sent it accordingly to Mr. W. H. Edwards, of Western Virginia, and I have much pleasure in stating that he considers it a new species, and has given it the name of "*Thecla Ontario*." A plate and description of this interesting capture will be given shortly in the Transactions of the American Entomological Society.—EDMUND BAYNES REED, London, Ont.

CAPTURE OF *PIERIS RAPÆ* IN THE U. STATES.—Mr. Saunders writes in No. 2 that he took *P. rapæ* below Quebec in 1866; I have taken it this year at Lewiston, Me., and Montpelier, Vt. It was more plentiful in July and August than any other species. I noticed at both places that it was only to be found very near the city, one mile into the country beyond the cultivated kitchen-gardens I did not see a single specimen; possibly its larva lives on cultivated plants. It is well worth noticing its advance north and south, and recording the facts, so that if any change in its markings or colour takes place from the extremes of climate, future Entomologists may have data to go upon. As plentiful as *Pieris oleracea* is in Northern Vermont, I have never known it taken in this part of Massachusetts; possibly *P. rapæ* may not spread as far south as here.—PHILIP S. SPRAGUE, Boston, Mass. [The food-plants of *P. rapæ* are cabbages, mignonette, nasturtium (*Tropæolum*), and various Cruciferae. It has proved very destructive to cauliflower and cabbage plants in the neighbourhood of Quebec. An interesting account of its first occurrence in this country is given by Mr. Bowles in the *Canadian Naturalist* for August, 1864. ED.]

DARAPSA OR OTUS, which shall it be?—A correspondent reminds us that the generic name *Otus* (Nos. 13, 14 and 15 in our "Notes on Lepidoptera") is pre-occupied in Ornithology, having been applied as far back as the days of Aristotle to the horned or eared owls. The usual rule is that no generic

name shall be applied to more than one genus in any branch of Natural History, and hence Hübner's name for these Sphinges will have to be dropped, while we return to the more familiar appellation *Darapsa*. The present rules of nomenclature are highly unsatisfactory and occasion naturalists an immense amount of useless labour; we do hope that something may be done at the next meeting of the American Association to improve matters.—Ed. CAN. ENT.

PAPILIO MACHAON IN BRITISH AMERICA.—I do not know whether the Canadian Entomologists are aware that *P. machaon* is found in British America. Some years ago I received several taken by Mr. Drexler at Rupert House, Hudson's Bay.—WM. H. EDWARDS, Coalburgh, Kanawha Co., West Va.

NEW ENTOMOLOGICAL WORKS.

A GUIDE TO THE STUDY OF INSECTS, and a Treatise on those Injurious and Beneficial to Crops.—For the use of Colleges, Farm-schools, and Agriculturists. By A. S. Packard, jun., M.D., Salem: Press of the Essex Institute. Parts 1 and 2, 1868. Price 50 cents each.

This new work by Dr. Packard supplies collectors and students of insects in America with what they have long searched for in vain—a thoroughly good, reliable, well-illustrated manual of structural and systematic Entomology, prepared by one who is a master in the science. We most strongly recommend all our readers to become subscribers to this work, and we assure them that they will find in it an abundant fund of interest and instruction. The two parts already issued contain clear and concise descriptions of the anatomy, transformations, geographical and geological distribution, diseases, &c. of insects; directions for collecting and preserving specimens; a list of works on Entomology; tables of classification; and the beginning of a systematic account of the order Hymenoptera. They are illustrated by 78 well-executed wood-cuts and two full-page plates; each part consisting of about 64 clearly printed pages. The work is to be completed in 8 or 12 parts, issued at short intervals; the author particularly desires that subscribers would remit for eight parts at once (\$4 in U. S. currency), and thus materially assist the publishers in getting out the work.

THE BUTTERFLIES OF NORTH AMERICA: with colored drawings and descriptions. By Wm. H. Edwards. Philadelphia: the American Entomological Society. Part 1, April, 1868. Price \$2.

It would be difficult indeed to produce anything more beautiful or true to nature than these exquisite drawings of Butterflies; they vie in excellence with any European work that we have seen. Mr. Edwards, we understand,

apart from his scientific attainments, has the finest collection of North American Diurnal Lepidoptera in existence. We can, therefore, have full confidence in his ability to carry out satisfactorily the magnificent work he has undertaken, of which the part before us is a worthy beginning. This part contains five large quarto plates of various species of *Argynnis*, viz. *A Diana*, *Cybele*, *Aphrodite*, *Nokomis* and *Atlantis*, accompanied by descriptive letterpress of a valuable character. It is noteworthy that little or nothing is known of the larvæ of any of these five species, shewing us how much still remains to be done by Entomologists, and how far even the Butterfly field is from being worked out. Though the work is necessarily costly, it is yet one which no Lepidopterist can afford to be without, while at the same time it deserves the hearty support of all Entomologists, no matter to what order they devote their attention. Its publication at intervals of three months renders the expense of the subscription less onerous than were it to appear more frequently.

EXCHANGES.

EUROPEAN NEUROPTERA.—Mr. R. McLachlan (20, Limes Grove North, Lewisham, London, S.E., England), the well-known student of Neuroptera, desires to exchange European insects of this order for Canadian ones,—*Phryganidæ* especially desired, but all will be acceptable. Specimens for transmission may be sent to the Editor of this Journal, REV. C. J. S. BETHUNE, Credit, Ont.

CARABIDÆ.—I should like to open a correspondence with any Entomologist in regard to exchanges of Coleoptera, especially *Carabidæ*.—PHILIP S. SPRAGUE, 141 Broadway, So. Boston, Mass.

LEPIDOPTERA.—Canadian Lepidoptera, especially species of *Catocala* (*C. relictæ* in particular) desired in exchange for American Lepidoptera.—JAMES ANGUS, West Farms, N.Y.

LEPIDOPTERA.—In addition to the species mentioned in No. 1., Mr. G. W. Peck, of New York, desires the following:—*Arctia parthenos*, *Catocala relictæ*, *C. briseis*, *Lycaena pambina*, and other more northern or eastern Lepidoptera. Good U. S. specimens in exchange. Apply to the EDITOR C. E.

TO CORRESPONDENTS.

M. S. R., Wooler, Ont.—Your specimens reached us in good order, thanks to careful packing. No. 1 is a rare wood boring beetle whose larva infests the Lombardy poplar, Balm of Gilead, and other trees; its name is *Prionus brevicornis*, Fab.; we should be glad of more specimens of it, if you have them to spare. No. 2 is, as you thought, the larva of the Cecropia

Emperor Moth (*Samia cecropia*, Linn). No. 3, Larva of the Yellow-necked Apple-worm (*Datana Ministra*). No. 4, Larva of the Apple Buprestis Borer (*Chrysobothris femorata*) which is very destructive to young trees in many parts of the country. No. 5, a true Bug (*Hemiptera*) in its wingless state. We do not know its name. There were also enclosed three caterpillars, without numbers attached; they had so lost their colours from preservation in alcohol that we were unable to determine them with certainty.

SUBSCRIPTIONS to Vol. I. have been received, with thanks, from the following:—Rev. R. B., Hamilton; Dr. R. R. S., Komoka; L. L., and H. R. W., Winona (per Mr. Pettit); G. W. P., New York; P. S. S., Boston, Mass., J. C. O'R., T. K., O. J. P., St. Catherines; W. H. M., Coalburgh, Va. Subscriptions to the *American Entomologist* from Dr. R. R. S., Komoka, W. H. M., Hamilton; R. N. B., Niagara; Rev. R. B., Hamilton; O. T. S., Wellington Square; T. K., and O. J. P., St. Catherines.

Letters received:—H. L. M., Malden, Mass. (Nos. 1 & 2 sent; 75 cents in U. S. currency)—S. M. L., Garrettsville, Ohio, ditto; shall be glad to receive subscriptions from your neighbourhood)—G. T. B., Quebec (a welcome letter)—T. M. T., Halifax, N.S. (Happy to hear of your safe return).

To meet the convenience of our Canadian readers we shall be happy to procure for them any of the Entomological works noticed from time to time in our columns; the cheaper publications will be sent *post free* on receipt of the prices mentioned. For sale, one copy of vol. i., several of vol. ii. of the *Practical Entomologist*, 50 cents. each. We will furnish the *Canadian Entomologist* (50 cents) and the *American Entomologist* (\$1.00), post-paid for one dollar and twenty-five cents (\$1.25) per annum.

THE CANADIAN ENTOMOLOGIST is published, not oftener than once a month, by the

Entomological Society of Canada at the following rates:—

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To non-members (in Canada), 50 cents per vol. of 12 numbers.

To non-members (in the United States), 62 cents per volume,—the additional 12 cents is for postage which has to be prepaid. (The ordinary U. S. fractional currency may be sent.)

Extra copies, 5 cents each, 50 cents per dozen.

Suitable advertisements will be inserted on reasonable terms.

N.B.—Correspondence is invited respecting the habits, localities, occurrence, etc., of insects, as this journal is intended to be a medium for the recording of observations made in all parts of the country; insects for identification will be gladly attended to and returned when desired. Any contributions to the publication fund will be thankfully received and gratefully acknowledged.

All communications, remittances and exchanges, should be addressed to "THE REV. C. J. S. BETHUNE, *Credit, Ont., Canada.*"

The Canadian Entomologist.

VOL. I. TORONTO, NOVEMBER 16, 1868. No. 4.

ENTOMOLOGICAL NOTES.

PAPER No. II.

BY W. SAUNDERS, LONDON, ONT.



FIG. 1.

While looking over some insects in Hamilton a few days since collected by Miss Mills, daughter of Wm. H. Mills, Esq., I was delighted at finding a specimen of *Libythea bachmani*, Kirtland, which is probably a variety of *L. motya*, Boisd. It was almost entire, though somewhat beaten. The young lady had

taken it on the beach at Hamilton early in August. She found it settled on the sand, and it seemed at first partially torpid, but when captured used its wings freely in trying to escape. It is a very peculiar insect, with very long palpi. Fig. 1 is a representation of it, and we subjoin a description as well.

Palpi very long, fully one fifth of an inch, formed like a beak, brown above, whitish below. Body dark brown, with a faint metallic hue; paler below.

Wings angular, expand $1\frac{3}{4}$ inches. Primaries above dark brown, with three white spots arranged in a triangle near the tip. The upper interior one largest, oblong, irregular in outline, divided by the nervules at its upper edge; the lower is also oblong but smaller; the exterior is smallest and irregular in form. On the interior of the wing, beyond the middle, are two large fulvous spots, the upper elongated, pointed at each end—the lower oblong, irregular, and divided near the middle by a dark brown nervule.

Secondaries above dark brown, with a large irregular fulvous patch across the middle.

Under side of primaries paler than upper, with the same white spots and fulvous markings, the latter somewhat larger and coalescing. The tip has a faint bluish tinge, with a slight iridescence.

Secondaries with a wide brown border on hind margin, above bluish, iridescent, streaked with brown.

This butterfly is quite new to Canada, never having been taken here before to our knowledge. It is found in Ohio and in some other parts of the United States.

A short time ago I forwarded to W. H. Edwards, Esq., of Coalburgh, West Virginia, several specimens of *Lycæna*, which I was in doubt about, for determination. Some were taken by myself about London, others had been received from J. Pettit, Esq., of Grimsby. In a recent letter Mr. Edwards informs me that the box was broken in transit and the specimens almost demolished, but he observed among the fragments, wings of *Lycæna violacea* Edwards, one of which belongs to a female. This species resembles "*lucia*" in appearance; the points of difference between them are detailed at length by Mr. Edwards in the Proceedings of the Entomological Society of Philadelphia, vol. vi. p. 201 to 204. I incline to think that the specimens sent Mr. Edwards, which he has determined to be *violacea*, were from Mr. Pettit's collection, but cannot say positively. These additions, with the new species referred to in the last number, by E. B. Reed, Esq., bring up our list of Canadian butterflies to eighty-five.

Philampelus satellitia.—One of our London Entomologists, J. M. Denton, Esq., has been so fortunate as to secure two specimens of the larva of this very rare insect this season. They were taken nearly full grown on the Virginia creeper (*Ampelopsis quinquefolia*), they were of the dark variety, about three inches long, blackish brown, with six large oval cream-colored spots on sides; these spots formed a very striking contrast with the general color. The usual caudal horn is replaced in this species by a smooth raised eye-like spot. One of these larvæ is now in chrysalis. Several years ago a lady brought me a specimen of the same larva, but I did not succeed in rearing it. These are the only instances known to me of the finding of this insect about London.

On the 11th of August I was collecting insects near Milton Junction, Wisconsin, on the Chicago and North Western Railway. While walking along the railroad track I observed a cocoon very like that of *Spilosoma Isabella*, fastened to the upper part of the stem of an annual plant which, in consequence of the intense heat of the summer, was prematurely withering. I was much interested in this pupa. Could it be *Isabella*? If it was it must either be the cocoon of a larva of last year's growth, which had spent the winter and nearly all the hottest part of summer in the caterpillar state—a thought I could not for a moment entertain—or it must be from a larva of the present year, resulting from eggs laid late in June. Both these conclusions being beset with difficulties, I inclined to the view that it might be the pupa of an Aretian I had not met before. So it was carefully boxed up.

Early in September, after my return home, this box was examined and found to contain a genuine *Isabella* moth recently escaped from the chrysalis. . If this insect had been left to nature would it have spent the winter in a torpid state ; or would it have deposited its eggs and died before the severe weather came on ?

But further. Early in September Mr. E. B. Reed, while collecting at Amherstburgh, took a specimen of *Arctia phalerata*, Harris, and one of *Arctia Saundersii*, Grote. My specimens of *Saundersii* have invariably been taken in June and July, and having reared this insect through its several stages, I am conversant with its history. It appears in June, deposits its eggs early in July, and dies. The larvæ do not complete their growth the first season, some of them indeed do not acquire more than half their size when they hybernate for the winter ; completing their growth early the following spring, when they enter the chrysalis state and appear as moths in June again. Probably the habits and history of *Phalerata* are similar. How came it that these moths—good specimens too—were abroad in September ? During the latter part of August I was surprised to find the imago escaping from some chrysalides of *Darapsa pampinatrix*, which were obtained from larvæ gathered late in July. I at first thought this might be an exceptional instance, but was soon convinced of the contrary by the appearance of a second brood of the caterpillars on my grape vines, in numbers far surpassing the earlier brood. I also observed the moth about on the wing. Some of them appeared so late that the larvæ have not had time to complete their growth and must necessarily perish. Only yesterday, October 8th, I found them not more than half grown, nearly frozen, clinging to the under side of the dry frosted leaves, which they could not eat.

About the middle of September a friend of mine who had laid aside some pupæ of *Sphinx quinquemaculata* for next year, was astonished to find the moths buzzing about in his box. They had all escaped. My esteemed friend, Rev. C. J. S. Bethune, informs me that he has had a similar experience with the pupa of *Sphinx cinerea*.

What is the occasion of all this ? Can it be due to the unusual heat of the summer maturing these creatures before their time ?

MEETING OF THE ENTOMOLOGICAL SOCIETY.

A meeting of the Society was held on the 10th inst. in the rooms of the Canadian Institute, Toronto ; Mr. W. H. Ellis, Curator, in the Chair. After the reading of the minutes, the following gentlemen, nominated at the Annual General Meeting of the Society at London, were unanimously elected Honorary Members :—

E. T. CRESSON, Esq., Secretary to the American Entomological Society, Philadelphia, Pa.

W. H. EDWARDS, Esq., Coalburgh, Kanawha Co., West Va.

PROF. TOWNEND GLOVER, Agricultural Department, Washington, D. C.

AUGUSTUS R. GROTE, Esq., New York.

DR. GEORGE H. HORN, President of the American Entomological Society, Philadelphia, Pa.

DR. J. L. LECONTE, Philadelphia, Pa.

DR. A. S. PACKARD, JUN., Editor *American Naturalist*, Salem, Mass.

C. V. RILEY, Esq., State Entomologist of Missouri, St. Louis, Mo.

S. H. SCUDDER, Esq., Secretary, &c., to the Society of Natural History, Boston, Mass.

BENJ. D. WALSH, Esq., M.A., State Entomologist of Illinois, Rock Island, Ill.

The following gentlemen were also elected members :—

MARMADUKE S. RICHMOND, Esq., Wooler, Ont., to be an Ordinary Member.

JOHN FLETCHER, Esq., Detroit, Michigan, (late of Oakville, Ont.,) to be a Corresponding Member.

A vote of thanks was passed to F. Walker, Esq., of Elm Hall, Wanstead, Essex, England, for his kind donation of two boxes of specimens of various orders of British and Foreign insects.

A collection of *Cicindelidæ* was exhibited by the Rev. C. J. S. Bethune, after the examination of which, as well as of the new donations, the meeting adjourned.



NOTICE OF A STATION FOR MELITÆA PHAETON IN THE NEIGHBOURHOOD OF OTTAWA, ONTARIO.

BY B. BILLINGS.

Early in July I accidentally discovered a locality for this rare butterfly within two miles of the city limits. It is an open swamp, densely surrounded with coniferous trees, which are almost impenetrable except by a path which passes through them. It occupies an area of about eight or ten acres, with a few scattered trees of *Thuja occidentalis* and *Larix Americana*. The shrubs consist of *Alnus incana*, *Rhamnus alnifolius*, *Rubus triflorus*, *Ledum latifolium*, and an occasional clump of *Cernus stolonifera*, *Myrica Gale*, and *Salix candida*. The principal herbaceous plants are *Thalictrum Cornuti*, *Chelone glabra*, *Platanthera hyperborea*, *P. dilatata*, *Cypripedium pubescens*, *C. spectabile*, and a few grasses and sedges. *Aspidium Thelypteris* is

very abundant, and the surface to a great extent is covered with several species of our most common *Hypnum*.

This season I watched faithfully for the appearance of the imago, making occasional visits to the spot during the month of June. It was first observed on the 3rd of July, and between this time and the 20th I made five or six excursions, capturing during the period over 200 specimens. I seldom met with them on the wing, but generally resting on the alders or ferns. They were not difficult to capture, appearing quite tame, and when aroused would fly but a few yards and alight; even if one escaped from the net it would fly but a short distance, and could be easily recaptured. On dull days they were quite sluggish, sleeping exposed on the upper surface of leaves, and readily taken without the aid of the net.

It is not improbable that they are double brooded, the *larvæ* produced from the eggs of the second brood not appearing until the following spring. I conjecture this from the circumstance of having two years ago seen a female late in August or early in September.

MISCELLANEOUS NOTES.

CAPTURE OF TREMEX COLUMBA.—One of the objects which the promoters of the *Canadian Entomologist* had in view, in the establishment of that periodical, was, I apprehend, to convey information respecting the appearance of various insects, whether of common or of rare occurrence, within the limits of our Province. Under this impression, I send you a notice of the capture of some specimens of the *Tremex Columba* in our village, a few days ago. Last March, an oak, measuring nearly three feet in diameter at the butt, was felled and chopped into cordwood lengths. One of the pieces, a portion of the main stem, was split up the other day, and placed close to a stove for immediate use. On being thus subjected to the influence of heat, several individuals of the insect, in the *imago* state, crept out, from various perforations, in a semi-torpid condition, that is to say, they appeared barely able to crawl about, and made no attempt to use their wings or even to hasten their pedal movements for the purpose of escaping capture. On further search *larvæ* were also discovered in the wood. I regret to add that all the specimens I found were females. Their length, exclusive of the ovipositor, was $1\frac{3}{8}$ in. This is the first occasion of my discovering these insects in this locality.—VINCENT CLEMENTI, North Douro, Ont.

LUMINOUS LARVÆ.—With reference to our account of a Luminous Larva in No. 1, Mr. W. Couper, of Ottawa, Ont., writes as follows:—"I frequently found larvæ of *Lampyridæ* in the daytime under moss and bark of decayed trees, but never noticed them produce light, as you describe. I do not recol-

lect seeing larvæ of *Lampyris* of the length of an inch and a-half. I enclose the exuvia of a larva of one of the genera of this family, which I found under bark here. Has it the form of your insect? I do not believe that the larvæ of *Lampyris* enclose themselves in cocoon-like balls such as are formed by the larvæ of *Geotrupes* and *Osmoderma*. As you can see from the exuvia, its transformation is evidently similar to that of *Dermestes lardarius*, and other active Coleopterous larvæ" [Our larva was immensely larger and quite different from the owner of the exuvia sent us by our correspondent; his looks very like the larvæ of *Chauliognathus pensylvanicus*, a very common insect here, figured in the last number of the *American Entomologist*, but we could hardly judge from a cast-off skin. We have, however, sent it, together with a luminous female captured by Mr. Jas. Angus at West Farms, N. Y., and another taken by ourselves here, to Philadelphia, for identification.—ED. C. E.]

EXCHANGES.

EUROPEAN DIPTERA, &c.—I have a large number of English, European, and Exotic Diptera, entrusted to me for sale or exchange; in the latter case, Hymenoptera, particularly the parasitic species, and minute Coleoptera, are chiefly requested in return.—F. WALKER, Elm Hall, Wanstead, Essex, Eng.

COLEOPTERA.—I have been collecting Coleoptera for many years past, but am still in want of many northern species; shall be glad to exchange.—J. AKHURST, 4½ Prospect Street, Brooklyn, N. Y.

LEPIDOPTERA.—I wish to obtain any species of Labrador or other far north butterflies, for which I would make a good return. I have a large number of specimens of various *Catocalas*, which I would gladly exchange for the following species: *C. relictæ*, *unijuga*, *uxor*, *epione*, *polygama*, *briseis*, *vidua*.—JAMES ANGUS, West Farms, N. Y.

* * * We insert lists of specimens for exchange *free of charge to subscribers*. Of course it is understood that an actual *quid pro quo* is not expected, but that all Entomologists are willing to help one another to the best of their ability, without making a mercenary transaction of the exchange.

NEW ENTOMOLOGICAL WORKS.

LIST OF THE LEPIDOPTERA OF NORTH AMERICA. By Aug. R. Grote & C. T. Robinson. Part I. Philadelphia: American Entomological Society. September, 1868.

In 1860 the Smithsonian Institution published a catalogue of the described Lepidoptera of North America, prepared by the Rev. Dr. Morris, which has proved of very great value to the students of this order of insects. Since

then vast strides have been made in the study, a multitude of new species and new genera have been added to our Fauna, and thorough revisions of the synonymy, nomenclature, and natural affinities of many families have been published; a new list has thus become an absolute necessity to those who desire to keep up with the progress of the science. We are glad to find that Messrs. Grote & Robinson have undertaken the work, to properly accomplish which no more competent Entomologists could have been found.

The part before us contains the Sphingidæ, *Ægeriadæ*, Thyridæ, Zygaenidæ, and Bombycidæ; the Butterflies are soon to follow, but the remaining families of moths are to await the publication of monographic papers now in course of preparation. The List is clearly and beautifully printed in the same style as Dr. LeConte's Catalogue of Coleoptera. Among the Sphinges we notice that the name *Otus* has been dropped and *Darapsa* resumed, the former being pre-occupied in Ornithology, as we observed in our last issue; in the case of *Daremma undulosa*, Walker's specific name is retained. The publication of this List will render unnecessary our doing more than merely referring to the changes of name in Canadian species in our notes on Lepidoptera, as the synonymy is fully given in regular sequence. Might we suggest to our authors the publication of a List with reference to descriptions, in a similar manner to Melsheimer's and Morris' Catalogues, so that the student might know where to look for descriptions of the species and genera?

THE INSECT WORLD; being a popular account of the orders of Insects, together with a description of the Habits and Economy of some of the most interesting species. From the French of Louis Figuier. Illustrated by 564 wood-cuts, by MM. E. Blanchard, Delahaye, after Reaumur, etc. New York: D. Appleton & Co., 1868. Toronto: Adam & Stevenson. Price \$1.50.

The title of this handsome work, which we have given in full, will afford our readers a good idea of its general character. It is a popular and very readable book, profusely illustrated, and as far as we can judge from a limited examination, quite reliable in its statements. It will no doubt be found valuable by beginners in Entomology, though to residents in America it possesses the drawback of referring for the most part to European species of insects, which are not found on this side of the Atlantic.

BOOKS RECEIVED.

Proceedings of the Boston Society of Natural History. Taken from the Society's Records. Vol. xii., June to October, 1868.

The American Entomologist. St. Louis, Mo., October and November, 1868.

The Maine Farmer. Augusta, Me., September 3, 10, 19, 26, October 3, 10, 17.

TO CORRESPONDENTS.

M. S. H., East Liverpool, Ohio.—The *Canadian Naturalist and Geologist* was published by the Natural History Society of Montreal. It commenced in February, 1856, since which time eight volumes of the old series, and Vols. i. and ii., with three numbers of Vol. iii. of the new series, have been published. The last number, that for May, 1867, appeared in January last, since which time we regret to say, the publication has been discontinued, but we trust it will soon be resumed. We shall be glad to receive communications from you at any time.

J. F., who has lately removed from Canada to Detroit, Mich., wishes to know whether there are any Entomologists in his new place of abode. We do not know of any ourselves, but perhaps some of our readers, who may be better acquainted with the locality, will kindly inform us.

G. M. M., Fort Reynolds, Col.—Have sent a specimen number as desired.

B. B., Ottawa; T. R., Montreal.—The cork, we regret to say, has not yet arrived; we shall send you the quantities you desire immediately upon its receipt.

SUBSCRIPTIONS to Vol. i. have been received, with thanks, from the following:—H. L. M., Malden, Mass.; E. L. G., and J. A., Brooklyn, N. Y.; Dr. W. E. M., Grimsby, Ont.; J. A., West Farms, N. Y.; F. G. S. (with addition from S. H. S.) Boston, Mass. To Vol. i., with the *American Entomologist*, from Dr. R. H. G., Bayfield, Ont., and Rev. L. P., Portneuf, P. Q.

B. B., Ottawa, Ont.—The large Moth, of which you sent us a drawing, is a specimen of *Erebus odora*, Linn. This fine insect has also been taken at Toronto, by Dr. Sangster, who kindly gave us an opportunity of comparing his specimen with your drawing.

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The Canadian Entomologist.

VOL. I. TORONTO, DECEMBER 15, 1868. No. 5.

DESCRIPTIONS OF NEW CANADIAN ICHNEUMONIDÆ.

BY E. T. CRESSON, PHILADELPHIA, PA.

1. *BANCHUS FLAVESCENS*.—♂. Pale yellow; a bilobed mark behind antennæ, extending between them downward upon middle of face, band across vertex from eye to eye, covering ocelli, posterior margin of occiput, maxillary palpi, two apical joints of labial palpi, antennæ above, stripe on middle of mesothorax, dilated anteriorly, a stripe on each side over the wings, basal suture of scutellum, base of metathorax, broader laterally, spot on each side of pleura posteriorly, posterior coxæ within, their femora beneath, apex of their tibiæ, and a broad band at base of four basal segments of abdomen, black; antennæ longer than body, slender at tips; scutellum with an acute dusky spine; wings hyaline, faintly yellowish, nervures brown, stigma and costa pale honey-yellow; posterior coxæ and femora stained with ferruginous; abdomen shining, short, apex broad, truncate and compressed. Length five lines.

Hab.—Ottawa, C. W. (Mr. Billings.) Coll. Am. Ent. Soc.

2. *BANCHUS BOREALIS*.—♂. Pale ferruginous, shining; orbits, clypeus, mandibles, palpi, and four anterior legs yellowish; stripe down middle of face, spot beneath eyes, two spots behind antennæ, band across vertex from eye to eye, covering ocelli, posterior margin of occiput, three broad stripes, sometimes only one, on mesothorax, basal sutures of scutellum and metathorax, spot on pleura beneath, posterior coxæ within and at base beneath, line on posterior femora beneath, and a sub-basal fascia, sometimes irregular, on second and following segments of abdomen above, becoming less distinct on apical segments, black; sometimes the pleura is black with a large ferruginous spot on each side; posterior tibiæ dusky at apex; wings yellowish-hyaline, subviolaceous, slightly dusky at apex, nervures brown, stigma and costa honey-yellow; antennæ brown above; scutellum with an acute spine; metathorax rugulose, posterior angles prominent; abdomen smooth and shining, first segment with prominent stigmatic tubercles. Length $5\frac{1}{2}$ lines.

Hab.—Ottawa, (Billings); London, (Saunders). Coll. Am. Ent. Soc.

3. *BANCHUS CANADENSIS*.—♂ ♀. Ferruginous, dark on head and thorax; face except central stripe, front except two black spots behind antennæ, broad posterior orbits, line on collar, two lines on mesothorax dilated anteriorly, tegulæ, line beneath, scutellum, spot on postscutellum, transverse subangular band on metathorax, spot on each side, elongate spot on pleura, four anterior coxæ beneath, trochanters, spot on posterior coxæ behind, four anterior femora in front, their tibiæ and tarsi, basal half of posterior tibiæ, base of their tarsi, and apical margin of abdominal segments, broadest on second and third, yellow; antennæ blackish, pale at base beneath; central dark stripe of mesothorax, sometimes black; scutellum with a short acute tubercle in ♂, scarcely visible in ♀; wings yellowish-hyaline, nervures brown, stigma and costa pale honey-yellow; tips of posterior tibiæ sometimes blackish; abdomen polished, compressed at apex, which is truncate in ♂, pointed in ♀. Length $4\frac{1}{2}$ –5 lines.

Hab.—Ottawa (Billings); London (Saunders). Coll. Am. Ent. Soc.

4. *AROTES AMOENUS*.—♀. Black, shining; face, orbits, broad behind, mouth, broad annulus on antennæ, large mark on each side of prothorax, margins of mesothoracic lobes, tegulæ, spot beneath, scutellums, large trilobed mark at tip of metathorax, a round spot on the flanks, large mark on each side of pleura, indented with black anteriorly, four anterior legs, spot on posterior coxæ above and beneath, their trochanters, tips of their femora, basal third or half of their tibiæ, their tarsi except claws, and a narrow apical fascia on all the abdominal segments, pale yellow or yellowish-white; wings hyaline, the extreme apex fuscous, nervures black, second recurrent nervure not uniting with the transverse cubital nervure; four anterior femora black behind; first abdominal segment with a prominent sub-basal tooth beneath; venter yellowish, the long acute ventral valve blackish; ovipositor longer than body, rufous, sheaths black. Length $6\frac{1}{2}$ – $7\frac{1}{2}$ lines. ♂, of a brighter yellow; antennæ longer than body, yellow, only its basal half above, black; posterior coxæ yellow with a black line above and within, their femora black above, except tips, sometimes only the extreme base of their tibiæ are yellowish; the abdominal fasciæ are broader, and the basal segment has a central yellow stripe more or less abbreviated behind, and sometimes reduced to a sub-basal spot. Length $5\frac{1}{2}$ – $6\frac{1}{2}$ lines.

Hab.—London, (Saunders); Grimsby, (Pettit). Coll. Am. Ent. Soc. This is a handsome and conspicuous species.

5. *AROTES FORMOSUS*.—♂. Differs from *amoenus* by the yellowish markings being much paler and less developed; the antennæ are black at extreme apex both above and beneath, the sides of the thorax are almost entirely black; the superior wings have a fuscous spot at extreme tip, and the second

recurrent nervure unites with the transverse cubital nervure, by which character it may be readily distinguished from *amoenus*. Length $5\frac{1}{2}$ lines.

Hab.—Ottawa, (Billings). Coll. Am. Ent. Soc.

6. *COLEOCENTRUS PETTITI*.—♀. Black, somewhat shining; wings yellowish-hyaline, nervures black, honey-yellow at base, areolet small, triangular, petiolated; legs honey-yellow, coxæ and posterior tibiæ black, posterior tarsi yellow, dusky at base; abdomen broad at apex, which is compressed and shining; ovipositor as long as body. Length $6\frac{1}{2}$ lines.

Hab.—Grimsby, C. W. (Pettit). Coll. Am. Ent. Soc. In this genus the last ventral segment is long and lanceolate, as in *Arotes*, but which has the areolet of anterior wings wanting.

This fine species is respectfully dedicated to Johnson Pettit, Esq., of Grimsby, to whom I am indebted for many specimens of Canadian Hymenoptera.

— 7. *RHYSSA CANADENSIS*.—♀. Black, shining; anterior orbits, interrupted on each side of antennæ, palpi and tegulae white; antennæ brownish at tip and beneath; mesothorax coarsely transversely rugose; metathorax with a broad, deep, longitudinal channel on the disk; wings hyaline, faintly stained with yellowish, nervures black, pale at base, as well as extreme base of stigma, areolet minute, petiolated, sometimes reduced to a mere point; legs bright honey-yellow, tips of all the tarsi, extreme tips of posterior femora, and base and apex of their tibiæ, fuscous, middle of tibiæ pale; abdomen long, minutely transversely aciculate; ovipositor longer than body, piceous, sheaths black. Length 7–8 lines.

Hab.—Quebec (Couper). Coll. Am. Ent. Soc. Mr. Couper informs me that this insect was found "boring into a pine tree."

8. *EPHIALTES MACER*.—♀. Slender, black, shining, with short, thin, glittering, cinereous pile; cheeks and sides of thorax polished; clypeus reddish; palpi whitish; metathorax with a shallow central channel; tegulae, and sometimes a short line in front, whitish; wings hyaline, beautifully iridescent, nervures brown, areolet triangular; legs honey-yellow, front coxæ, except dusky spot in front, their trochanters, and apex of four posterior trochanters, whitish; tips of posterior femora, their tibiæ and tarsi more or less dusky, the tibiæ more or less pale at middle and within, and sometimes the middle tibiæ and tarsi are varied with dusky, the posterior coxæ in one specimen are dusky behind; abdomen long, cylindrical, surface uneven, densely punctured and somewhat shining, subpubescent, posterior margin of the segments unevenly transversely wrinkled, first segment shorter than second, the second to fifth one-third longer than wide; ovipositor twice, sometimes nearly four times longer than body, very slender, rufous, sheaths

black. Length 4-5 lines; with ovipositor 11-19 lines. ♂ has antennæ brown, pale beneath; legs paler than in ♀, the anterior coxæ and trochanters white, posterior legs more or less obfuscated, base of their tibiæ and of their tarsi white; abdomen with first segment about as long as second, with two longitudinal ridges, most prominent at base. Length $2\frac{1}{2}$ -3 lines.

Hab.—Ottawa (Billings); London (Saunders). Coll. Am. Ent. Soc. This is the smallest and most slender of our North American species.

9. *PERITHOUS PLEURALIS*. — ♀. Black, shining; anterior orbits, basal margin of clypeus, mandibles, palpi, scape beneath, tip of scutellums, spot beneath posterior wing, arched line on tip of metathorax, four anterior coxæ, all the trochanters, anterior legs in front, and posterior margin of abdominal segments, interrupted laterally by a dusky spot, white; scutellum, pleura, sometimes the anterior portion of mesothorax, tibiæ, and posterior coxæ, honey-yellow; antennæ brownish; wings hyaline, iridescent, nervures brown, pale at base, as well as a spot at base of stigma; tibiæ and tarsi whitish, tips of posterior femora, a line on outside of all the tibiæ, encircling the apex of posterior pair, and tips of tarsal joints, blackish; segments of abdomen shining, with a lateral blister-like elevation on each, two basal segments with thick coarse punctures, remainder with sparse punctures; ovipositor longer than body. Length $4\frac{1}{2}$ - $6\frac{1}{2}$ lines.

Hab.—Grimsby, C.W. (Pettit). Coll. Am. Ent. Soc. Closely resembles the European *P. mediator*, but differs in the ornamentation of the legs.

10. *ARENETRA CANADENSIS*. — ♂. Deep black, densely and coarsely punctured; head, thorax and base of legs, thickly clothed with short black pubescence, most dense on the head; antennæ long, slender; wings hyaline, nervures black, areolet small, triangular, subpetiolate; apex of femora, the tibiæ and tarsi dull testaceous, posterior pair pale fuscous; abdomen narrow, subdepressed, shining at tip, apical margin of third and following segments with a very narrow pale fascia. Length 5 lines.

Hab.—London, C. W. (Saunders). Coll. Am. Ent. Soc. Very closely allied to *A. nigrita*, Walsh, which has the pubescence less dense, and whitish.

11. *LISSONOTA RUFIPES*. — ♀. Black, somewhat shining; legs rufous, the coxæ, trochanters, and posterior tibiæ and tarsi black; middle tibiæ and tarsi sometimes dusky; wings dusky hyaline, iridescent, nervures black, areolet small, petiolated; abdomen shining at tip; ovipositor longer than body; body densely punctured, most sparse on abdomen. Length $4\frac{1}{2}$ lines.

Hab.—Grimsby, C. W. (Pettit). Coll. Am. Ent. Soc.

12. *LISSONOTA FRIGIDA*. — ♀. Black; head and thorax densely punctured, opaque; abdomen shining, delicately punctured, polished at apex; wings dusky hyaline, iridescent, areolet triangular, not petiolated; legs, including

coxae, and abdomen except base of first and the two or three apical segments, rufo-ferruginous; four posterior trochanters and posterior tibiae and tarsi fuscous; ovipositor as long as body. Length $3\frac{1}{2}$ lines.

Hab.—Ottawa (Billings); London (Saunders). Coll. Am. Ent. Soc.

13. *LISSONOTA BRUNNEA*.—♀. Entirely brownish ferruginous, subopaque, four anterior legs paler; body covered with dense punctures; anterior orbits, mouth, and tegulae, yellowish; wings yellowish-hyaline, nervures black, areolet small, petiolated; ovipositor as long as body, rufopiceous. Length $5-5\frac{1}{2}$ lines.

Hab.—Ottawa, C. W. (Billings). Coll. Am. Ent. Soc.

14. *XORIDES VITTIIFRONS*.—♀. Black, shining; anterior orbits, face except upper margin, spot on base of mandibles, palpi, line on collar, lateral margin of mesothorax, spot on scutellum, another on post-scutellum, tegulae, and narrow fascia on apical margin of each segment of abdomen, abbreviated laterally on basal segments, white; wings hyaline, nervures black; legs, including coxae, honey-yellow; anterior pair and spot on base of posterior coxae above, yellowish; apex of posterior femora, their tibiae and the four posterior tarsi, fuscous; mesothorax transversely rugose, middle lobe very prominent; metathorax rugulose, sub-pubescent; ovipositor as long as body, slender, reddish, sheaths black. Length 9 lines.

Hab.—London, C. W. (Saunders). Coll. Am. Ent. Soc. The white spot on the face is more or less indented with black above, and sometimes completely divided longitudinally by a black line; the posterior legs, except coxae, are sometimes more or less obfuscated, with the extreme base of their tibiae pale.

15. *ECHTHRUS NIGER*.—♀. Deep black, subopaque, mesothorax shining; tip of labrum, annulus on antennae, tegulae, and the dilated anterior tibiae in front, white: legs tinged with piceous; wings hyaline, faintly dusky at tips, nervures black; metathorax rugose, elevated on the disk; ovipositor longer than body, reddish, sheaths black, whitish at tip within. Length $7\frac{1}{2}$ lines. ♂. Smaller and very slender, shining; antennae entirely black, nearly as long as the body; lateral margin of face, tip of labrum, spot on clypeus, spot beneath eyes, tegulae, tips of anterior femora, and a line on outside of all the tibiae, white. Length 6 lines.

Hab.—Ottawa, C. W. (Billings). Coll. Am. Ent. Soc. Very closely allied to the European *E. reluctator*, but readily distinguished by the white tegulae.

16. *ECHTHRUS ABDOMINALIS*.—♀. Black, subopaque; antennae with a broad whitish annulus; wings hyaline, tinged with yellowish, nervures black, stigma reddish; palpi, legs and abdomen, rufous; tegulae reddish; ovipositor

as long as the body, reddish; metathorax as in the preceding species. Length 6 lines. ♂. Much slenderer than ♀, with lateral margin of face, scape of antennæ beneath, and tegulæ, pale; antennæ entirely black; posterior tibiæ dusky, their tarsi pale; abdomen petiolated, long, thickened toward apex. Length $5\frac{1}{2}$ lines.

Hab.—Ottawa, C. W. (Billings). Coll. Am. Ent. Soc.

LUMINOUS LARVÆ.

We have received the following note from Baron Osten Sacken, of New York, on the subject of our larva:—

“A luminous larva is mentioned in your No. 4, p. 30. Is it not the larva of *Melanactes*, described and figured by me in the Pro. Ent. Society, Phil. 1862, p. 125, Tab. i. fig. 8, under the name of ‘Unknown larvæ?’

“At that time I was uncertain about the genus of the larvæ, as well as about the fact of their being luminous. But in a notice which was published in the same proceedings subsequently I communicate the fact, that I found the same larva alive, that it *is* luminous, and that it probably belongs to the genus *Melanactes*.

“The latter article I cannot refer to now, as I have not the book at hand. But it may be found in the Proc. Ent. Soc. Phil., in one of the years after 1862, in the form of a letter read at one of the meetings of the Society.

“R. OSTEN SACKEN.”

The notice referred to we have found in the Pro. Ent. Soc. Phil., Vol. iv. No. 2, in the minutes of a meeting of the Society held on April 10, 1865 (p. 8). The Baron, after referring to his paper and figure in 1862. states that, “Last September Mr. J. Carson Brevoort was fortunate enough to find one of the large larvæ near West Point, N. Y., under a stone. The specimen is *three inches long*, and belongs to the same species as that which I had figured. In the dark, *this larva emits a soft green light*, shining principally through the sides of the body and the venter; on the back it appears only in the intervals between the horny segments. The whole length of the larva being thus illuminated in the dark, when it moves briskly about, it is a most beautiful object. The larva is still alive, although I have little hopes that it will undergo its transformation in captivity. But I have not the slightest doubt now that it belongs to *Melanactes*, the more so as this genus, in Dr. LeConte’s arrangement, is placed in the same subtribe (*Corymbitini*) with *Pyrophorus*. At the time when I first described this larva, all the large specimens which I possessed came from the South (Arizona, New Mexico, Louisiana), and I was not aware that such specimens could be found in the Middle States, and as the largest *Melanactes* occurs in the latter States, this made me doubt that the larva could belong to that genus. The discovery of

the larva in the State of New York removes this doubt. Since it is settled that the larva is an elaterideous one, its structure only gains in interest. As I have shewn in my paper, it has more the character of the *Lampyridæ* than of the *Elateridæ*, and, remarkably enough, it has very little resemblance to the larva of *Pyrophorus*. The latter reproduces the common type of the *Elateridæ*, and is very like the larva of *Alaus*."

Our larva, of which we gave a description in No. 1, p. 2 (this description had probably not come under the notice of Baron Osten Sacken when he wrote to us), corresponds very closely in structure and luminosity to the *Melanactes* larva above referred to, and, we now believe, is a species of that genus. It chiefly differs from that described by Baron Osten Sacken in size, being only 1.50 in. in length, coloration, and in being less convex above. The friend who brought me the specimen states that he had frequently seen these "glow-worms" before on his farm, so I trust some more will turn up next year, and that I may have the good fortune to rear a specimen.

The larval exuvia sent us by Mr. Couper (*vide* No. 4, p. 29), is believed by Dr. LeConte to belong to *Photinus borealis*, Randall; its luminosity has not yet been ascertained.

On the 3rd of September, 1868, in the damp misty evening, we captured in a wooded valley close to a little stream, a larva whose anal segments were brilliantly and steadily luminous; a few weeks later we received a similar larva from Mr. James Angus, of West Farms, N. Y., which he found in a path on the night of the 15th of October, being attracted to it by its light; a few days after he found another of the same species under a stone, which also emitted light when kept till evening. These specimens have been determined by Dr. LeConte to belong to the common *Photuris pennsylvanica*, DeGeer; the larva and beetle are figured in the October number of the *American Naturalist*, p. 432.

We are very much obliged to our correspondents for the kind assistance they have given us in the investigation of this, to us, interesting subject.—
ED. C. E.

LONDON BRANCH, ENTOMOLOGICAL, SOCIETY, CANADA.

MONTHLY MEETING.

The regular monthly meeting of this Branch of the society was held, on Friday, October 20th, at 8 o'clock, P.M., at the residence of Mr. Charles Chapman. Six members were present. The minutes having been read and signed, the REV. R. H. STARR was duly elected a member.

Messrs. Saunders and Reed were appointed a committee to confer with the Church of England Young Men's Association, as to giving an Entomological Entertainment under the auspices of the Association.

The members expressed the great pleasure it gave them to welcome back to London their esteemed friend and former President the Rev. G. M. Innes, who has been in Quebec for the last four years.

Mr. Saunders exhibited specimens of the Tree Cricket, *Aecanthus niveus*, with examples of their destructive work on raspberry canes, and the young wood of plum trees; this insect deposits its large eggs in a row in the centre of the twig or cane, and thus weakens it so as to cause it to break off from the weight of foliage in early spring.

A copy of the first two parts of Mr. Edwards' excellent work on the Butterflies of North America was also on the table, the plates of which were much admired.

A MUSICAL LARVA.

BY E. B. REED, LONDON, ONTARIO.

On September 10, 1868, during one of our regular Monday morning excursions, I captured on a beech tree, a short distance from London, a larva which I judged to belong to the *Smerinthian* genus. Its chief peculiarity, to which I wish to call attention, was its power of emitting a singing noise when handled or disturbed. The noise was similar to that produced by that pretty little beetle so common in our gardens, *Lema trilineata*. This is the only instance of a musical larva that I have met with, nor do I remember to have ever seen any mention in entomological books of a similar case. I should be glad to know, Mr. Editor, if you, or any of your correspondents, have ever noticed this musical power in any larva? or if you can explain the manner in which the noise is produced. My specimen was full grown, and in a couple of days duly passed into the pupa stage under the earth in a flower-pot, which I duly deposited in my winter box that I keep buried in my garden, but to my great disappointment it shared the fate of most of the *Smerinthian* larvæ I have ever attempted to rear, and although it survived the winter, it failed to reach maturity. I subjoin a description of this larva, as possibly some of your correspondents may recognise it.

Length $1\frac{1}{2}$ inches. Body tapering anteriorly.

Head large, triangular; of a deep shining green color, with lateral yellow stripes, a reddish spot at the apex; a paler green and granulated on the back of the head behind the stripes. Mandibles black.

Body apple-green, thickly covered with small greenish-yellow granulations; the anterior segments semi-transparent; on each side seven faint greenish-yellow oblique stripes edged anteriorly with large granulations, the central stripes having a reddish tinge, the last stripe wider than the rest and terminating at the base of the caudal horn; the latter at an angle of 20° , recurved backwards, purplish red and thickly granulated; the anal plate with

a central elongated black patch with a larger granulation on each side. Stigmata small, round, and dull red.

Under surface slightly paler than the upper, with a darker central line.

Feet pale green, spotted with red; prolegs greenish, semi-transparent.

NOTE BY ED. C. E.—This description corresponds very nearly to that of the larva of *Smerinthus excæcatus*, by Mr. Lintner (Pro. E. S. Phil. iii. p. 665). We have never ourselves met with any Lepidopterous larva that emitted sounds; the imago of *Sesia thysbe* is described by Dr. Gibb (Can. Nat. and Geol. 1859, p. 122) as giving forth a loud and most striking note, "something like the squeaking of a mouse or a bat," which he attributes to the action of the respiratory organs. The well-known European Death's-head moth (*Acherontia atropos*) emits a somewhat similar noise, even before leaving the pupa case, as well as afterwards; Kirby & Spence state further (letter xxiv.), that "its caterpillar, if disturbed at all, draws back rapidly, making at the same time a rather loud noise, which has been compared to the crack of an electric spark."

MISCELLANEOUS NOTES.

DOUBLE BROODS.—If others take as much pleasure in reading your little Journal as I do, possibly my mite of information may be acceptable. Mr. W. Saunders has asked a question, in the concluding part of his paper, No. 2, for November, although I cannot give an answer, yet I believe I can throw a little light upon the subject. In the summer of 1865 I fed upon the potato the larva of *Macrosila celeus*, G. & R. (*Sphinx 5-maculata*), which came out of the chrysalis in August. I then made record of the fact which to our entomologists was new. The following year I also raised upon the potato *Macrosila carolina*, Clemens., a pair of which came out in September. The same year I also raised from larva *Hemileuca maia*, Walk. (*Saturnia maia*, Harr.), part of the brood coming out in October, and one deformed specimen in the following May. Miss C. Guild, of Walpole, Mass., a close and careful observer and a reliable naturalist, informs me that her experience with the last named species is, that of the same brood of larvæ all going into the chrysalis nearly at the same time, part come out in October and others not until the following October, some lying in the chrysalis one year longer than others. I have been puzzled to account for their seeming irregularities, but as instances of the fact increase, conclude it is a provision of nature that our lack of knowledge only makes it strange. In Mr. B. Billings' article in the same number of your paper he enquires if *Melitæa phæton* may not be double brooded. Mr. Scudder, in his list of butterflies of New England, says, "I have taken the caterpillar just ready to change, upon the barberry

in the middle of May; does the larva hibernate?" He also says, "it is very rare in Mass" (1863). I with many others had been in anxious search for this beautiful butterfly up to 1866 without success, except in the extreme southern part of the State, now all of a sudden in this year (1866) they were found in their special localities, low and swampy meadows, quite plentiful, and have continued still more plentiful (from June 17 to July 8) to the present time. Dr. Harris collected in this vicinity from about 1825, and with a few exceptions never had met with it.

It is possible that in some instances they may be double brooded, but I have never met with it out of its special season.—PHILIP S. SPRAGUE, 141 Broadway, South Boston, Mass.

OCCURENCE OF *DEILEPHILA LINEATA* IN ENGLAND.—In the September and October numbers of the *Entomologists' Monthly Magazine* (London, Eng.) there are numerous accounts of the capture of this handsome sphinx in various parts of England. Is this the same species as that taken in this country, or is it the European *D. livornica*, the *D. lineata* of Fabricius' later works, and of Stephens?

EXCHANGES.

COLEOPTERA.—I am desirous of exchanging *Coleoptera*, as I am forming a collection of North American *Coleoptera*, and wish to get every species from every part of North America in which it may be found. If you can put me in the way of any Canadian collectors who wish to exchange I should be very much obliged. I have at present a collection of about 2,000 species, mostly from New England, N. Y., Penn., D. C., and Mich.,—very few Northern or Western species, and am desirous of making arrangements to get such.—E. P. AUSTIN, Cambridge, Mass.

HYMENOPTERA.—Mr. E. T. Cresson, of Philadelphia—whose valuable paper, containing original, hitherto unpublished descriptions, of new Canadian species of this order, we print on a previous page—begs to inform the Entomologists of Canada that he will be glad to determine specimens of Canadian *Hymenoptera* for any one who will send a duplicate set, duly numbered to correspond with their cabinet specimens, to the care of JOHNSON PETTIT, Esq., Grimsby, Ont., who will forward them to him. He will describe all the new species thus received in the *Canadian Entomologist*. There is a peculiar fauna in this country of which he would like to get a good collection so as to make the species known to science.

We trust that all our Canadian readers will send on what undetermined *Hymenoptera* they have, and make a point of collecting diligently in this interesting order next year.—ED. C. E.

NEW ENTOMOLOGICAL WORKS.

THE BUTTERFLIES OF NORTH AMERICA; with colored drawings and descriptions. By Wm. H. Edwards. Philadelphia; The American Entomological Society. Part 2, August, 1868. Price \$2.

The second part of this magnificent work, to which we have already drawn attention, is now before us. It contains five beautifully colored plates, and descriptive letter press; the species figured (none of which are Canadian) are *Argynnis callippe*, Boisd., taken in California; *A. hesperis*, Edw., from Colorado; *Colias Alexandra*, Edw., from Empire City, Colorado, "high up in the mountains, near the Snowy Range;" *C. Helena*, Edw., from Mackenzie's River; *C. Christina*, Edw., from Slave River; *C. Behrii*, Edw., from among the Yo Semite Mountains, California, at an elevation of about 10,000 feet above the sea; *Apatura Alicia*, Edw. (new species), from New Orleans.

BOOKS RECEIVED.

Proceedings of the Boston Society of Natural History. Taken from the Society's Records. Vol. xii., Oct. 7 and Nov. 4, 1868.

The Maine Farmer. Augusta, Me., Nov. 7, 14, 1868.

From Prof. Townend Glover, Washington, D. C., a series of his admirably executed plates on the cotton plant and the insects injuring it, and on *Diptera*, &c., in all forty-three plates. A valuable addition to the, at present, small library of the Society; and for which we beg the author to accept our best thanks.

TO CORRESPONDENTS.

REV. L. P., Port Neuf, P. Q.—The following are all of your Coleoptera that we are able to determine as yet; we shall endeavour to have the rest named for you shortly. (3) *Oxytelus sculptus*, Grav. (5) *Hylastes pinifex*, Fitch. (6) *Hylastes*? (7) *Dinoderus substriatus*, Payk. (9) *Tacyporus jocosus*, Say. (10) *Dibolia aerea*, Mels. (11) *Paria 4-notata*, Say. (12) *Haltica*? (14) *Pterostichus lucublandus*, Say. (15) we take to be an *Amara* not a *Pterostichus*; the species of this genus are very difficult to determine; your specimen differs from all in our cabinet.

V. S. C., Covington, Ky.—Your letter was received after our article on "Luminous Larvæ" was in type. The specimen enclosed which, you say, when taken last June, was luminous, and had power to put out its fire at will, is the larva, we think, of a *Photuris*, but different from any that we have. Your common fire-fly is, you state, *Photinus centrata*, Say.; it is not taken in Canada, our commonest phosphorescent species being *Photuris pennsylvanica*, DeGeer. Stainton's "Manual," vol. ii. (London, Van Voorst, 1859, price 10s.), contains a synopsis of the genera and species of *British Micro-Lepidoptera*; his "Entomolo-

gist's Companion" (Van Voorst, 3s.), is a manual on the *Tineina*; the most complete work is his "Natural History of the *Tineina*" (Van Voorst, 12s. 6d. each vol.), which is published in annual volumes since 1856. *American* species and genera are described by Dr. Clemens in the Pro. Acad. Nat. Sci. Phil. 1859, pp. 256 and 317; 1860, pp. 4, 161, 203, 345, and 433; and also in the Pro. Ent. Soc. Phil. We do not know of any work on the Micro-Homoptera. We can supply you with the Cork you require, but how shall we send it? The charges by express would be more than double its value for so small a quantity; by Post it would have to go at letter rates, as there is no Parcels Post between the two countries.

SUBSCRIPTIONS to vol. i. have been received from the following:—E. P. A., Cambridge, Mass.; H. F. B., Waterbury, Conn.; Miss E. R. C., Amherstburg, Ont. (per Mr. Reed), and Dr. A. S. P., jun., Salem, Mass. (2 copies, for the library of Bowdoin Coll., Brunswick, Me., and the Portland Soc. Nat. History).

LETTERS RECEIVED.—E. T. C., Philad. (3. Many thanks); Prof. T. G., Washington, D. C.; Dr. J. L. LeC., Philada.; S. H. S., Boston, Mass.; Dr. G. H. H., Philada.; B. D. W., Rock Island, Ill.; T. R., Montreal (with P. O. O.); J. A., West Farms, N. Y. (the box has not yet arrived, but we have caused the express agents to make enquiries respecting it).

SHEET CORK.—We have now on hand a large supply of sheet cork, imported from the English manufacturer. Ordinary thickness for cabinets, 16 cents per square foot; extra thick for travelling boxes, 24 cents do. The former can be sent to any place in Canada by parcels post at the rate of 12½ cents per 6 feet; the latter 12½ cents per 5 feet.

THE CANADIAN ENTOMOLOGIST is published on the 15th of each month by the Entomological Society of Canada. In consequence of the new Postal Law, which requires pre-payment of all Periodicals after January 1, 1869, we are constrained to make a slight change in the rates of subscription, as follows:—

To members of the Society, gratis.

To non-members (in Canada) 56 cents per vol., post-paid; two copies to one address \$1.

To subscribers in the United States, 62 cents per volume, free of Canada postage. The ordinary U. S. fractional currency may be sent.

To subscribers in Great Britain. 3 shillings per volume, post-paid. The amount may be sent in stamps.

Extra copies 5 cents each, 50 cents per dozen.

The *American Entomologist* (\$1), and the *Canadian Entomologist* (56 cents), will be furnished, post paid, for one dollar and twenty-five cents (\$1.25) per annum.

N.B.—Correspondence is invited respecting the habits, localities, occurrence, &c., of insects, as this journal is intended to be a medium for the recording of observations made in all parts of the country; insects for identification will be gladly attended to and returned when desired. Any contributions to the publication fund will be thankfully received and gratefully acknowledged.

All communications, remittances and exchanges, should be addressed to "THE REV. C. J. S. BETHUNE, *Credit, Ont., Canada.*"

The Canadian Entomologist.

VOL. I. TORONTO, JANUARY 15, 1869.

No. 6.

NOTES ON CANADIAN LEPIDOPTERA.

(BY THE EDITOR.)

(Continued from page 18.)

32. *CALLIMORPHA LE CONTEI*, Boisd.—In our List as a *Hypercompa*. Grote and Rob., in their valuable "List of Lepidoptera," p. viii, enumerate no less than seven varieties or synonyms of this species, of which *C. Contigua*, Walk., was included in our list. This is certainly a well-marked and constantly form, and can hardly, we think, be merged into *Lecontei* until both have been reared from the same larvæ. Mr. Saunders (*vide* C. E., No. 3, p. 20) has been the first to rear and describe the larva of any species of this genus.

33. *CALLIMORPHA INTERRUPTO-MARGINATA*, Beauv.—Formerly known as a *Hypercompa*. What a pity that we cannot substitute Harris' short and appropriate name *Anchora* for the species!

34. *PLATARCTIA PARTHENOS*, Harris.—This new genus, which includes five species, has been separated by Dr. Packard from *Arctia*; its members are distinguished by having no gay-coloured bands across the fore-wings, but a yellowish band across the hind-wings beyond the middle. *Parthenos* is an extremely rare insect in Canada; we have seen but one specimen, captured by Mr. J. M. Jones, in Nova Scotia. Should any collector be so fortunate as to make a haul of this species at any time, we trust he will remember that both we and many of our correspondents are anxious to obtain specimens.

35. *PLATARCTIA BOREALIS*, Mösch.—A full description of this insect is given by Dr. Packard (Pro. E. S. Phil. iii. 111). He states, on the authority of Mr. Edwards, that it has been taken at Quebec. Another species, *P. Scudderi*, Pack., we can hardly include as Canadian yet; it was taken by Mr. Scudder, on the Saskatchewan river.

36. *EUPREPIA AMERICANA*, Harris.—In our List as an *Arctia*.

37. *PYRRHARCTIA ISABELLA*, Smith.—A new genus, by Dr. Packard, for this old friend (well known as a *Spilosoma*), and a Californian species.

38. *LEUCARCTIA ACRÆA*, Drury.—Also separated from *Spilosoma*, by Dr. Packard.

39. *HYPHANTRIA TEXTOR*, Harris.—A common insect in many parts of Ontario, but not included in our Lists. Its larva is likely to become only too familiar with apple growers (*vide* Canada Farmer, 1867, p. 269.)

40. *ORGYIA NOVA*, Fitch.—We took this species at Cobourg, in Sept. 1865, flying about a lawn in the sunshine.

41. *ICHTHYURA INVERSA*, Packard.—Taken at London, Ontario, by Mr. Reed, at Cobourg, Ontario, by ourselves, and in Nova Scotia, by Mr. Jones.

42. *ICHTHYURA ALBO-SIGMA*, Fitch.—In our List as a *Clostera*. Taken in Toronto and other parts of Canada, and also in Nova Scotia.

43. *ICHTHYURA INCLUSA*, Hübn.—In our list as *Clostera Americana*, Harris.

44. *DATANA CONTRACTA*, Walk.—Taken by Mr. Reed, at London, and by ourselves at Credit, June 22, 1868, attracted by light.

45. *DATANA ANGUSII*, Grote & Rob.—Taken by Mr. Pettit, at Grimsby, Ontario. We have to thank Mr. James Angus, of West Farms, N. Y., from whom the species derives its name, for a fine pair of specimens, together with a number of other insects.

46. *CÆLODASYS BIGUTTATA*, Pack.—Taken at Orillia, Ontario, by Mr. Bush; described by Mr. Walker (C. B. M. xxxii. 417), and in our List, as *Heterocampa ducens* and *H. compta*.

47. *HETEROCAMPA MANTEO*, Walk.—In our List as *H. subalbicans*, Grote; the former name has the priority.

48. *IANASSA LIGNICOLOR*, Walk.—Described by Walker afterwards (C. B. M., xxxii, 427) as *Edema? transversata*; the name *Edema plagiata*, Walk., is also to be dropped from our List. According to Grote & Rob. (Trans. Am. Ent. Soc. ii. 86) it belongs to *Parorgyia*, Pack.

49. *DRYOPTERIS ROSEA*, Grote.—Taken in Nova Scotia, by Mr. J. M. Jones, President of the Institute of Natural Science at Halifax.

50. *DRYOPTERIS IRRORATA*, Packard.—Also taken in Nova Scotia, by Mr. Jones.

51. *TELEA POLYPHEMUS*, Hübn.—In our List as a *Saturnia*.

52. *ACTIAS LUNA*, Leach.—Ditto.

53. *CALLOSAMIA PROMETHEA*, Drury.—Ditto. A new genus by Dr. Packard.

54. *PLATYSAMIA CECROPIA*, Linn.—Ditto. A new genus by Mr. Grote.

55. *PLATYSAMIA COLUMBIA*, Smith.—This species, which is described as closely allied to *P. cecropia*, but differing from it in all its stages, is reported to have been taken in the neighbourhood of Quebec; we should like to hear from our friends in that quarter about it. Its food-plant, the *Rhodora Canadensis*, grows plentifully back of Toronto, so we hope to hear of its capture there ere long.

56. *HYPERCHIRIA VARIA*, Walk.—We have been so long accustomed to call this insect *Saturnia io*, that we find it difficult to recognize it under its proper name. *Io* is the name of a South American insect of a different genus.

57. *ANISOTA STIGMA*, Smith.—In our List as a *Dryocampa*.

58. *ANISOTA SENATORIA*, Smith.—Ditto.

59. *ANISOTA PELLUCIDA*, Smith.—Ditto.

60. *TOLYPE VELLEDA*, Hübn.—In our List as a *Gastropacha*.

61. *TOLYPE LARICIS*, Fitch.—Ditto.

62. *CLISIOCAMPA DISSTRIA*, Hübn.—In our List as *C. sylvatica*, Harris; the former name has the priority.

63. *XYLEUTES ROBINIÆ*, Harris.—In our List as a *Cossus*.

LIST OF DIURNAL LEPIDOPTERA

OBSERVED IN THE NEIGHBOURHOOD OF OTTAWA, DURING THE
SEASON OF 1868.

BY B. BILLINGS.

1. *Papilio turnus*, L.—Not common, a few specimens seen late in June and early in July.

3. *Papilio asterias*, Dr. — Rare. But two specimens seen, one in July, the other in August.

3. *Pieris oleracea*, Harr.—Plentiful. May, July, August and September.

4. *Colias philodice*, Godt.—Abundant throughout the season, except in July. The variety of white females was occasionally met with in August.

5. *Danaïs archippus*, Harr.—Very common from the last of July to 1st October. A few worn individuals seen about the 1st July. Does this species immigrate? Otherwise what becomes of it for nine months of the year?

6. *Limenitis disippus*, Godt.—June, rare. July to October very common. From the larva, I obtained a butterfly which remained but five days in the chrysalis state.

7. *Limenitis arthemis*, Dr.—Plentiful in woods. July and August.

8. *Argynnis cybele*, Godt.—July, August, and September. Not common.

9. *Argynnis atlantis*, Edw.—Appears to be rare. But two specimens observed.

10. *Argynnis myrina*, Cram.—Very abundant in June, and plentiful in August and September.

11. *Melitæa tharos*, Cram.—Common. July, August and September.

12. *Melitæa phaeton*, Cram.—Dow's swamp, two miles from city limits. Quite plentiful early part of July.

13. *Vanessa J-album*, Bdl. & Lec.—Rare. But one specimen seen, in August.

14. *Vanessa Milberti*, Gdt.—Very common from May to October, excepting during the month of June. About the 20th June, I collected 60 of the larvæ, which I confined in a single cell in the breeding cage. They refused to take food, and commenced to suspend themselves from the ceiling. Within two days every individual had passed into the pupal state, in which they remained but four days, at the end of which time I found 60 butterflies—not one, it appears, had failed to come to maturity.

15. *Vanessa antiopa*, L.—Rare. A single specimen seen in June, and several in October.

16. *Grapta progne*, Harr.—Rather rare, occasionally met with in open woods throughout the season, from May to October.

17. *Grapta faunus*, Edw.—Rare. But one specimen observed, in woods late in July.

18. *Neonympha eurythris*, F.—Common in open woods in July.

19. *Hipparchia Boisduvalii*, Harr.—Moist places; quite plentiful; July.

20. *Erebia nephele*, Kirby.—Abundant in fields and thickets in July and August.

21. *Chrysophanus Americana*, D'Urban.—Plentiful in June, and from the latter part of July to October.

22. *Lycæna neglecta*, Edw.—Rare. But a single specimen seen, in June.

23. *Lycæna lucia*, Westw.—Rather rare. June and July.

24. *Thecla acadica*, Edw.—Rare, on thistle blossoms in July.

25. *Pyrameis atalanta*, L.—Rare. But four specimens seen in August.

26. *Pyrameis cardui*, L.—From 1st of August to October; very common.

27. *Nisoniades brizo*, Bdl. & Lec.—Plentiful in thickets, in June.

28. *Eudamus bathyllus*, Bdl. & Lec.—Plentiful in June and July.

29. *Hesperia metacomet*, Harr.—Appears to be rare. A few specimens observed in meadows in July.

30. *Hesperia Hobomok*, Harr.—Abundant in June, not afterwards seen. There does not appear to have been a second brood.

31. *Hesperia ahaton*, Harr.—Very abundant the latter part of June and early in July. The only indication of a second brood was a single individual seen by me on 3rd September.

32. *Hesperia wamsutta*, Harr.—Abundant in July and occasionally met with in August.

33. *Hesperia mystic*, Scudd.—June, July, and August; in meadows; rare.

34. *Hesperia Leonardus*, Harr.—But a single specimen, seen in a meadow in July.

35. *Hesperia Pocahontas*, Scudd.—Rare; in thickets; June and July.

Besides the above, I have taken previous to the present season :

36. *Grapta comma*, Dbld.—Which I raised from larvæ found on the hop.
37. *Pyrameis huntera*, Sm.—Quite common in 1863.
38. *Thecla falacer*, Godt.—Taken on composite flowers in August.
39. *Nisoniades catullus*, Sm.—Taken within the government grounds at New Edinburgh.

MISCELLANEOUS NOTES.

MUSICAL LARVÆ.—Noticing Mr. Reed's communication in your issue of Dec. 15, 1868, I thought it might be interesting to note that about twenty similar larvæ were found by me last autumn, on the hickory. Unfortunately, they died before reaching the pupa state. The noise seemed to be produced by contracting the anterior segments, thus rubbing the granulations against each other. Another sphinx larva, which I cannot now identify, emitted a sound resembling that attributed by Kirby & Spence to the larva of *A. atropos*, on being disturbed. This seemed to be caused by quickly opening and shutting the mandibles.—THEODORE L. MEAD, New York.

WINTER COLLECTING.—As an inducement to others to try winter collecting, I would mention that I have taken lately, in addition to many common forms, specimens of *Plochionus timidus*, Hald., *Lymexylon sericeum*, Harris (dead), *Merinus lævis*, *Xylophilus piceus*, Lec., and others, with several species of Hemiptera, Hymenoptera, &c.

I am now making out a list of my species, and think I shall be able to add nearly 300 to our list of Canadian Coleoptera.—J. PETTIT, Grimsby, Ont.

LAST MOTH OF THE SEASON.—On the 29th of Nov. 1868, I captured under a tree a live specimen of *Xanthia ferrugineoides*, Guen.; the thermometer was then at the freezing point, and it snowed the whole of the rest of the day. I had seen several specimens of the same moth flying about on various occasions during October and November. In Sept. 1865, I took numbers of this species at Cobourg, about plum trees, on the fruit and flying, both in the day time and at night; it was accompanied by great numbers of *Anomis grandipuncta*, Guen., and several specimens of *Xylina Bethunei*, Grote & Rob. All three species appeared to have a high appreciation of our finer varieties of plums, of which we had a very large crop that year.—C. J. S. B.

DEPRAVED TASTE OF A SPHINX.—About mid-day on the 23rd of June, 1868, a very hot day, I was driving through a wood in the township of Trafalgar, when my nostrils were greeted with a horrid odour arising from the carcase of a little dog, floating in a filthy pool, the last remnant of a dried-up stream. The place was perfectly swarming with flies, and to my utter aston-

ishment I beheld, perched on the top of the carcase in the midst of the flies, a beautiful specimen of that most lovely moth, *Amphion nessus*, Cram. Having no net with me, I tried in vain to capture it, and, though repeatedly disturbed, it returned again and again to its horrid repast. I have often seen specimens of *Danaïs archippus* and other butterflies swarm about dead fish on the shores of Lake Simcoe, but I hardly expected to find so lovely a moth in such a position, in the full noon-tide heat and glare of the day; I have usually taken it hovering over the fragrant blossoms of the lilac, in the cool twilight of the evening.—C. J. S. B.

MUSICAL LARVÆ.—No. 5 of your valuable little Journal, full of interesting matter as usual, is before me. In regard to musical larvæ of Lepidoptera, I am happy to communicate a fact from my own observations on the larva of *Cressonia juglandis*, Grote (*Smerinthus juglandis* of Smith, Harris, *et auct. al.*) We find this species in the month of September, often into October, upon the "hickories" *Carya alba* and *porcina*. When the tree is struck or jarred, any larvæ that may be upon the leaves give utterance to a note resembling the sound *tcêp* or *tceep*, produced by the inspiration of a small quantity of air between the upper teeth of the human mouth and the lower lip, as in the act of sucking. As this larva clings quite firmly to its foothold, the jar may be often repeated, each time with the same result, before the insect is dislodged. On being seized between the thumb and finger a little behind the middle, it flexes the body sharply from side to side, with a simultaneous emission of the sound alluded to. While writing the above, my valued friend, Mr. Philip S. Sprague, of this city, has recalled the fact of a similar sound being produced by the larvæ of *Smerinthus excrucatus*, Smith, and *geminatus*, Say, when irritated, in the breeding cage. Mr. S. has, in his own mind, attributed this sound to the motion of the mandibles upon each other (quasi "gnashing of teeth?"). I presume similar occurrences have been noticed by other observers, and no doubt more thorough acquaintance with many of our so-called "dumb animals" will prove that "There is no speech nor language where their voice is not heard."—F. G. SANBORN, Boston, Mass.

NEW ENTOMOLOGICAL WORKS.

A GUIDE TO THE STUDY OF INSECTS, and a Treatise on those Injurious and Beneficial to Crops. For the use of Colleges, Farm Schools, and Agriculturists. By A. S. Packard, jun., M.D., Salem, President of the Essex Institute. Parts 3 & 4, 1868. Price 50 cents each.

Two more parts of this most valuable and interesting work are now before us. Part 3 is entirely devoted to the order Hymenoptera, and contains

accounts of the habits and economy of the various species of bees, wasps, hornets, ants, &c.; it is illustrated with three excellent full-page plates, and nearly fifty accurate wood cuts. Part 4 concludes the Hymenoptera, taking up the families of Ichneumons and other parasites, gall flies, saw flies, and horn tails; the remainder of the Part is occupied with the commencement of the order Lepidoptera, and describes the general structure of its members, the mode of rearing and preserving larvæ, and the beginning of an account of the family *Papilionidæ*. In the last few pages, we observed descriptions of two new species by our friend and coadjutor, Mr. W. Saunders, viz.: *Papilio brevicauda*, from St. John's, Newfoundland, and *Melitæa Packardii*, taken, we believe, in this country. This part is illustrated with upwards of sixty wood-cuts. Need we again commend this invaluable work to the attention and support of our readers?

THE AMERICAN ENTOMOLOGIST. Edited by B. D. Walsh and C. V. Riley.

Published monthly by R. P. Studley & Co., 104 Olive Street, St. Louis, Mo. Oct. Nov. and Dec. 1868, Jan. 1869.

Since our former notice of this excellent periodical, four more numbers have appeared, each one replete with interesting matter, and remarkably well illustrated with Mr. Riley's carefully-executed wood-cuts. We were much gratified at learning from the November number that its circulation was then "5,000 per month, and increasing at the rate of 15 to 50 daily." This is as it should be; and we hope to hear that it has attained to the number of 10,000 before the close of the volume. We may mention again that we shall be happy to supply subscribers in Canada with copies, free of both American and Canadian postage, on the receipt of one dollar; or, together with our own publication, post free for \$1 25. We shall willingly furnish specimen numbers on application.

BOOKS RECEIVED.

Proceedings of the Boston Society of Natural History. Vol. XII, Nov. 18, 25, Dec. 2, 1868. Besides much other interesting matter, we find in these *Proceedings* a description of a new species of *Thecla*, taken at Milford, N. H.; a method of preserving larvæ in carbolic acid; and descriptions of new species of North American Bees, by Mr. Cresson, including one from Canada. We are much obliged to the Society for the kind exchange, the advantage of which is almost all on our side.

The Maine Farmer. Augusta, Me. Nov. 21, 28, Dec. 5, 12, 19, 1868. An excellent agricultural and family paper.

Prospectus of *Le Naturaliste Canadien*; a projected monthly periodical, on all branches of natural history, to be published at Quebec (in French) by

M. C. Darveau, and edited by our respected correspondent, M. l'Abbe Provancher, of Portneuf. The subscription price is \$2 per annum, payable in advance. We heartily wish success to this first attempt to popularize natural history among the French speaking inhabitants of Lower Canada.

The American Naturalist. Salem, Mass. Vol. II, No. 11, Jan. 1859. We always look forward eagerly to the arrival of each number of this most interesting magazine. If any one with any taste for natural history wishes to spend a pleasant hour by the cozy fireside in winter, or enjoy the cool shade of a wide-spreading tree in summer, or indeed occupy his leisure time profitably and agreeably all the year round, we commend him to this periodical. Every number contains something about Entomology; this time there is a capital "Chapter on Flies," by Dr. Packard, illustrated with a full-page plate and several wood cuts. A new volume begins with the March number, when the editors find themselves compelled to increase the subscription price. It has always been a marvel to us how they provided such illustrations and such paper, to say nothing of the reading matter, at so low a rate. Up to March 1, the terms for Vol. III. will be \$3 50 (U. S. currency), *after that date* \$4. We will furnish it to our subscribers, post paid, for \$3 (Canadian currency) per annum; or the *Canadian Entomologist* and *American Naturalist* for \$3 25 per annum to new subscribers.

The Canadian Journal of Science, Literature and History, Vol. XII, No. 1, Dec. 1868. Toronto: printed for the Canadian Institute.

EXCHANGE.

BRITISH LEPIDOPTERA.—I shall be very happy to exchange British *Lepidoptera* for American *Lepidoptera*, or insects of other orders, especially the former. REV. F. O. MORRIS, Nunburnholme Rectory, Hayton, York, Eng.

* * Exchanges with European Naturalists are most kindly allowed to be effected, free of charge, by the Smithsonian Institution, Washington, D. C., to which the specimens must be sent securely packed and pre-paid. The English agent of the Institution is Mr. W. Wesley, 81 Fleet Street, London.

DONATION.

JOHNSON PETTIT, Esq., of Grimsby, Ontario, in forwarding his annual subscription to the Entomological Society of Canada, has kindly added a donation to the publication fund of \$2; he has also obtained the names of three persons for nomination as members. We beg to offer him our hearty thanks, and commend his good example to the Members of the Society.

All communications, remittances and exchanges, should be addressed to "THE REV. C. J. S. BETHUNE, *Credit, Ont., Canada.*"

The Canadian Entomologist.

VOL. I.

TORONTO, FEBRUARY 15, 1869.

No. 7.

ENTOMOLOGICAL NOTES.

PAPER NO. III.

BY W. SAUNDERS, LONDON, ONT.

Several years ago it occurred to me that a knowledge of the earlier stages in the lives of some of our Diurnal Lepidoptera, might possibly be arrived at by obtaining eggs from impregnated females in captivity. My experiments began with the Hesperidæ as offering the greatest probability of success. As many females as could be procured (beaten ones preferred as the likelihood of their impregnation was greater) were confined in separate boxes, some with glass tops admitting light, others darkened. My success was greater than I had anticipated, but none attended the use of boxes where much light was admitted. Whether the failure in the latter case was really due to the admission of light, I am not prepared to say; the number of glass covered boxes used was not proportionally large nor was their use long continued.

I obtained eggs from *Hesperia wamsutta*, *mystic*, and *hobomok*, and thus encouraged, the experiments were gradually extended to all the Diurnal Lepidoptera within reach, resulting in success with *Papilio turnus*, *Colias philodice*, *Argynnis myrina*, *Argynnis bellona*, *Polyommatus epixanthe*, *Polyommatus thoe*, and *Thecla inorata*, G. & R. (*falacer* Boisd. plate). In several instances the eggs were not fertilized, still I regard the results achieved as very encouraging, and feel persuaded that by continued perseverance, all that is wanting to complete the history of our butterflies may in this manner be obtained.

Papilio turnus.—A beaten female was captured in the beginning of July, 1865, and confined in an empty Seidlitz powder box; on the second or third day of captivity it was observed that the insect had deposited two eggs, and was still living; the next morning a third was observed and the butterfly found dead. The eggs were between one twentieth and one twenty-fifth of an inch in diameter, subglobular, flattened at the place of attachment—color dark green, surface smooth, without reticulations, but showing a few small irregularly distributed dots under a magnifying power of forty-five diameters.

On the 20th of July, one of them began to change color, growing darker; on the 21st it became very dark, and on the morning of the 22nd the young larva was hatched. The second egg was then deepening in color and produced the larva on the 23rd. The remaining egg was unproductive and after a time began to shrivel up.

Appearance of larva fresh from the egg.—Length one tenth of an inch. Head large, bilobed, black. Body black, roughened with small brownish black tubercles—second segment* elevated or thickened and of a dull glossy flesh color, with a prominent fleshy tubercle on each side, a patch of white on seventh and eighth segments, wide anteriorly, pointed behind. A dull flesh colored dorsal streak on fourth and eleventh segments. Twelfth segment with a pair of fleshy tubercles, rather prominent, but not so large as those on second. Both those on second and twelfth have several short whitish hairs proceeding from them. Under surface brownish black, feet and prolegs of the same color.

These larvæ I failed to rear. Having no trees of the wild cherry within a convenient distance, I thought they might be fed with leaves from a cultivated variety, on which specimens taken nearly full grown had been previously fed. It appeared however that the leaves were much tougher than those of the native species, so much so that the infantile jaws of these diminutive larvæ failed to make any impression on them, and before the mistake was discovered and the proper food supplied, they were weakened past recovery and died.

Colias philodice.—A female was captured on the 18th of July and placed in a large sized pill box. The box was examined every day until the 23rd and up to that date no eggs were deposited. It was not looked into again until the morning of the 26th, when five eggs were observed sticking to the sides of the box, and the parent dead. From the stiffness of the body of the dead insect, I thought that they were probably deposited on the 24th.

† The eggs were about one twenty-third of an inch long, much elongated, tapering at each end, with twelve or fourteen raised longitudinal ribs, with smaller cross lines in the concave spaces between them. The cross lines were not always regular, sometimes so, at other times two or three in a row were placed somewhat diagonally. Color when first deposited, pale lemon yellow, changing in three or four days to a pale red, then gradually to *bright* red, and from that to dark brown, just before the larva made its appearance. Four of the eggs hatched on the 30th and the remaining one on the 31st.

* In these descriptions the head is regarded as the first segment, making the total number thirteen.

† Some of the descriptions following have already appeared in Dr. Packard's book—"A Guide to the Study of Insects"—but for several reasons it has been thought desirable to publish the whole of the information gained by these experiments in an aggregate form.

Appearance of the larva fresh from the egg.—Length one twelfth of an inch. Head black with a few short whitish hairs, some of them rather thick and fleshy looking. Body dull yellowish brown, with longitudinal rows of hairs, similar to those on the head; those on the second segment and immediately behind the head, longer than the others. Hairs on body very short, whitish, semi-transparent, thick, some of them more like short tubercles than hairs. The descriptions of larvæ of this age, as well as of the eggs, were all taken under a magnifying power of forty-five diameters.

Appearance when more than half grown.—Length five eighths of an inch. Head dark green, slightly downy with minute hairs. Body of the same color, with the same downy look, occasioned by a great number of thickly set short hairs. The body is also dotted with points of a slightly paler hue. A yellowish white stripe on each side close to under surface. Beneath slightly paler than above, feet and prolegs of the same color.

The full grown larva differs from the foregoing only in size, being about one inch long, and in having an irregular streak of bright red, running through the whitish stripe close to under surface.

My specimens were fed on clover. I have since found this larva feeding on the wild lupin (*Lupinus perennis*) and also on the cultivated pea. It is not unlike a sawfly larva in form and action, feeding on the upper surface of the leaves and twisting its body into a coil when disturbed.

Pupa.—Length seven tenths of an inch, girt with a silken thread across the middle; greatest diameter about the sixth segment. Head case pointed, with a purplish red line on each side, running to the tip and margined behind with yellow. Body pale green, with a yellowish tinge and a ventral line of a darker shade, formed by a succession of minute yellowish dots—a yellowish stripe along the sides of the five hinder segments. Beneath on the seventh, eighth and ninth segments, is a blackish brown line on each side, deepening in color about the middle of each segment, and a dorsal line of dark green about the same length.

On the eighth day the color of the wings began to show underneath, the pink fringe prominent and the discal dots visible, and on the ninth and tenth days the imago appeared.

Argynnis myrina.—A female specimen, somewhat beaten, was captured on the 20th of June, and confined in a large pill box. One egg was deposited on the 22nd or 23rd, and five more on the 24th, all attached to the sides and bottom of the box. The eggs were pale green, elongated, in shape something like an acorn, base smooth and convex, circumference striated longitudinally, with about fourteen raised striæ, which were linear and smooth, spaces between, about three times wider than the striæ—depressed, concave in the middle, and ribbed by a number of cross lines, fifteen to twenty be-

tween each striæ distinctly indented. The egg was contracted at the apex, the striæ protruding at the tip all around, beyond the body of the egg. The eggs became much darker in color before the larvæ appeared.

The larva hatched in six or seven days, and when fresh from the egg was about one-tenth of an inch long. Head medium sized, black and shining. Body above dark brown with transverse lines of a paler color, especially on the anterior segments; and thickly covered with hair-like spines of a pale brownish color.

Between the first and second moult its length was one-fourth of an inch. Head bilobed, shining, black, and hairy. Body above greenish black, the greenish tinge most apparent on second and third segments, with a few small yellowish dots along each side and transverse rows of strongly elevated black tubercles, emitting numerous short, black, hair-like spines. Under surface similar to upper; feet black and shining; prolegs black, tipped with a paler hue.

After the second moult there were two fleshy tubercles on second segment much longer than the others, three or four times their length, and covered throughout with small hair-like spines. The yellowish spots along the sides of body assumed more of an orange tint, and one or two faint longitudinal streaks of the same color appeared along the sides close to under surface. Between the rows of large raised tubercles were many smaller ones, also black, appearing but slightly raised.

August 7th. Appearance of the full-grown larva.—Length, eight-tenths of an inch. Head slightly bilobed, black, shining, covered with short fine black hairs.

Body above dark greyish brown, beautifully spotted and dotted with deep velvety black, second segment with two long fleshy horns, yellowish white at base, black above, covered with minute blackish hair-like spines. The third and fourth segments have each four whitish spines tipped with black, those on sides are placed on the anterior portion of segment, those above about the middle. All the other segments have six whitish spines, excepting the terminal one, which has four. All the spines have fine branches of a black or brownish-black color, and are about one-third the length of the fleshy horns on second segment. A pale line extends along each side from fifth to terminal segments, close to under surface. The under surface is brownish black, darker on anterior segments; feet black and shining; prolegs brown, with a shining band of brownish black on the outside.

The chrysalis is about half an inch long, of a pale grey color, dotted and streaked with black. At the tip, beyond the base of antennæ, are two large conical tubercles. On the thorax, also, are several smaller pointed tubercles, and a double row along the abdomen of a similar character, those on the third

abdominal segment being larger than the others. The duration of the pupa stage was ten or eleven days.

Since the imago produced were under the average size, something must be added to the length and diameter of the larva and pupa described.

Argynnis bellona.—The eggs obtained from this species were unimpregnated, and soon shrivelled up. In size and color they were similar to those of *myrina*, but were not examined under a magnifying power.

Polyommatus thoe.—These eggs were deposited by a beaten female about the 6th of July, 1868. The egg is nearly round, a little flattened at the apex, and flattened also at the base. Color greenish white, thickly indented; at the apex is a considerable depression, around which the indentations are small, but increase in size as they approach the base.

Polyommatus epixanthe.—About the 10th of July, 1868, twelve eggs were found attached to the lid of a small pill box, in which two females were confined. The egg is nearly round, slightly flattened at the apex, flattened also at the base. Color milk white, thickly indented, a deep depression at the apex, and around this a number of indentations, which are nearly uniform in size all the way to the base—in this latter respect differing from those of *thoe*.

The eggs of both these species of *Polyommatus* remain as yet unchanged. There is no appearance of shrinking on any part of their surface; it is possible they may produce the larva in spring.

Thecla inorata, G. & R. (*Thecla falacer*, Boisd. plate).—About the middle of July, 1868, two eggs were deposited on the sides of a pill box. They were of a pale green color, nearly round, with convex apex, but flattened at the base, with a number of slightly raised longitudinal lines approaching each other near the tip. The depressions are without punctures. Each egg has a number of angular brownish spots distributed irregularly over its surface.

This box was overlooked for several days, and when examined again, the larvæ were found to have escaped and dried up for want of food.

SPIDER'S NESTS.

BY WM. COUPER, OTTAWA, ONTARIO.

The genus *Theridion* construct beautiful silken nests for the protection of their eggs. I have collected what I take to be the nests of three species in Canada. They are generally found under the bank of decayed forest trees. Another which I found on an old fence at Quebec, although not constructed of silk, its form, in my opinion, is sufficient to class it among the architecture of *Theridion*. One of these nests resembles that of *Theridion variegatum*, Walck., of Europe. It is pyriform, having a diameter of $\frac{1}{8}$ th inch, covered with strong, glossy, golden silk thread, evidently arranged for a two-fold pur-

pose—to allow a free circulation of air, and to keep off too much moisture from the eggs. This nest is suspended by a silken thread from the acute end generally in a cavity of the inner bark. It contains from seven to ten unattached eggs. When the young spiders attain the parent form, they issue from the nest by a small hole at the latter end, which was formerly made by the parent for the purpose of introducing the eggs. I cannot say that the Canadian spider, which formed the above cocoon is identical with the European *T. variegatum*, Walck. But in order to show that the architecture is the same, I quote from the *Entomologist's Weekly Intelligencer*, April 26, 1856: "On the 13th inst. I found, under the bark of an old hornbeam, at Hainault Forest, a little spider's nest, about the size of a pea, shaped like a balloon, covered with flossy silk of a fine red-brown color, and containing seven pellets, which had free motion. It was supported on a flexible foot-stalk, being altogether nearly half an inch in length, and formed one of the prettiest objects imaginable.—J. W. DOUGLAS."

The second form of nest or cocoon was found attached to the exterior bark of a birch tree at Quebec. It is sub-spherical, and measures $\frac{1}{4}$ th of an inch in diameter. The interior covering is composed of a fine flossy white silk, covered with numerous irregular red-brown threads, similar to those described on the former species. The spider is unknown to me, but from its form and material, I have no doubt of its belonging to the genus *Theridion*.

The third form of nest is still more remarkably beautiful, and undoubtedly the work of a species of *Theridion*. It is always found under bark of trees, suspended to a thread about an inch in length. Its shape is oblong, acute at both ends, and composed of white silk. Although the exterior is covered with a coarse coating of silken threads, it is so transparent that the eggs can easily be counted. I have found its architecture at Quebec and Ottawa, and I have a vague recollection of finding it at Toronto. Not having been successful in rearing this species, I shall be glad to receive any information regarding its habits.

The fourth nest was found attached to a fence at Quebec. Although I have some doubts regarding the authenticity of the architect, its form, and the manner in which it was suspended, are the only reasons for classing it near the above genus. The curious part of this little nest is that it is not constructed of silk, but formed of woody fibre taken from the weather-worn fence on which it was found. At first, I doubted that it was the work of an Arachnid, but on close observation, I detected the button of silk by which it was attached to the fence. Its form is spherical, measuring $\frac{1}{4}$ th of an inch in diameter. The pedicel is short, strongly made of woody fibre and silk, and it was firmly attached to the fence. This is the second instance that came under my observation of spiders using other material than silk to cover them-

selves while undergoing moult, or protecting their eggs when in the nest. I recollect coming across a locality near Quebec, where a kind of long grass was growing. I noticed that the tops of several of the blades of grass were bent in a curious manner. This led me to open one of them, and in it and other specimens, I found a spider undergoing moult. There was very little silk used in this form, which was constructed as follows: The spider first bent the top of a blade of grass downwards to a certain distance, attaching two of the edges together with silk, when it found this firm, it next proceeded to bend the remaining portion of the top upwards, thus inclosing itself in an oblong triangular cell, about an inch and a half long. This was indeed an ingenious contrivance to keep off its enemies.

I am anxious to obtain further information regarding the spiders that are found in this latitude, and which do not make use of silk, as a whole, to cover themselves or their eggs.

HABITS OF *MELITÆA PHAETON*.

I notice in the *ENTOMOLOGIST*, No. 4, some remarks on *Melitæa Phaeton*. I think there is something exceptional in the habits of this species, and I hope the observations of your correspondents may give us light.

On 1st May, 1868, one of my young friends in this neighborhood brought me eleven chrysalids of *Phaeton*, part of which he had found suspended to fence rails. He reported the caterpillars as crawling along the rails, and that he had tried to bring me some of them, but before he could reach me (living four miles distant,) all that he had taken had changed to chrysalids. I directed him to search for the food plant.

He returned two or three times, and up to 18th May had brought me 80 chrysalids and but two larvæ, the latter of which changed within a few hours after I received them. My friend reported that he had taken part of the larvæ from the pawpaw bushes, on which they seemed to be crawling and not feeding, and could give me no more information on the subject. I was unable to go personally to the spot, but next May will endeavor to investigate fully. From all these chrysalids I scarcely obtained half-a-dozen butterflies, and part of these were cripples. They began to emerge on 18th May. These larvæ probably came from eggs laid the previous May or June, for there certainly is but one brood annually hereabouts. I have taken the butterfly in no year later than the end of June, and they could not have escaped my notice or the notice of some of my collectors here, if they had appeared later, or in a second brood. Vegetation with us is far advanced by 1st May, and by 1st April our shrubs are partly leaved out, so that larvæ emerging from the egg early in April would be at maturity early in May.

We have here several species of *Melitæa*—*Tharos*, *Batesii*, *Marcia*, *Harrisii*,—all of which are double brooded, and which I believe pass the winter in the larval state. The habits of *Phaeton* seem to be generically different from these others. It belongs to the same group as *M. Arthemis*, of Europe, and Westwood describes this species as having its larvæ hatched in autumn, the young brood passing the winter under a common web, and as being full fed in April.

It is just possible that the eggs of *Phaeton*, although laid not later than June, may remain till October, and the young larvæ then be hatched, and that they spend the winter under a common web. But in this case they ought to be full fed by the middle of April, for they must be supposed to awake from their winter's sleep on the first warm days of spring, that is, not long after 20th March in this region.

At any rate here is a fair opportunity for investigation. One thing is noticeable about *Phaeton*, that wherever it appears at all, it is very local and in considerable numbers in its locality, which is rather favorable to the web theory. Twenty or fifty may be taken on one spot, which is not the case with any other *Melitæa* that I know of.

W. H. EDWARDS.

Coalburgh, West Virginia, Jan. 6, 1869.

[The above communication arrived too late for insertion in our last issue; we accordingly took the opportunity of submitting it to Mr. B. Billings, of Ottawa, the only Canadian Entomologist, so far as we are aware, who has met with any number of the insect in question. He writes as follows: "I found the insect in a certain spot in 1866 and 1868, and in October last searched for the larvæ without success. In my notice (CAN. ENT. No. 4, p. 28,) I specified the plants of the locality pretty fully, and am certain that it is upon one of these that it feeds. I have compared the vegetation of my locality with that of Mr. Edwards, and have arrived at the conclusion that it feeds there upon a different plant, but closely related in its botanical affinities, or containing some property common to both. I find that there are but three or four species that would or could probably occur as common to the two localities, and these are herbaceous.

"Assuming that the larvæ were but partially grown at the close of autumn, and spent the winter in a state of lethargy under a web, it would not be consistent to suppose that they would be attached to a plant whose stem dies down at the close of the season, and would be covered with water in the spring. I know that in the case of eggs this would be different, as they have a greater power of resisting the effects of moisture.

"Mr. Edwards has promised to investigate the matter next May, and no doubt he will succeed. Vegetation commences with him about five weeks

earlier than at Ottawa, and as I intend to be on the alert myself, my work will be comparatively lessened if I could be favoured with the result of his observations. Not that I expect to find it upon the same plant, but from its affinities or properties I can easily select the plant.

"There is a matter connected with this insect that I do not understand, that is, the cause of its local restriction. I know that the generally received opinion is that the localization of certain insects, such as Diurnal Lepidoptera, depends upon the existence of certain plants equally circumscribed in their habits. In the present instance the principal part of the plants are more or less local, inhabiting bogs, marshes, and swamps; but the most rare are found in many similar places over the country, where this insect does not occur. What, then, can cause the restriction of this insect to a circumscribed spot? Certainly, not altogether because it contains a certain species of plant. I suspect rather that it is partly due to topographical and other conditions, which involves a problem not easily solved."

Since the above was in type, we observed in the *American Naturalist*, June, 1868, p. 218, a note by Dr. Packard on this insect, in which he states that "the larva hybernates through the winter, and may be found in early spring feeding on the leaves of the Aster, the *Viburnum dentatum*, and the Hazel."—ED. C. E.

PARASITES IN THE CELLS OF *VESPA MACULATA*, LINN.

I collected several specimens of the nests of *Vespa Maculata*, Linn., last fall, for the purpose of studying their architecture. The cells of two nests carried home in October were infested with Hymenopterous parasites; one of these, I suppose to be a *Microgaster*, issued from a covered cell a few days afterwards. I obtained five specimens from this cell,—in which they occupied a longitudinal position, and each separated by a thin cocoon. It is evidently a *Vespa* pupa parasite, as I noticed that several covered cells had been occupied by it.—Therefore it occurs to me that they issue about the beginning of September, and afterwards hibernate. The length of the parasite is five-sixteenths of an inch.

The second, which I suppose to be the *Vespa* larvæ parasite, occupies about two-thirds of the open cells of the wasp. Their exterior cocoons are chestnut colored, and of a triangular shape, occupying the sides, near the bottom of the cells, where, in many cases, there are two parasite larvæ covered by one exterior cocoon, while each larva is enclosed interiorly in a strong oblong silken cell. The cells containing these parasites have been kept in a warm room since last October, and although the larvæ are quite active [Jan. 25th], no visible change appears to me to have taken place since the day they were

found. I describe these species in a paper on the Architecture of *Vespa Maculata* Linn, read by me a short time ago, before the Ottawa Natural History Society.

WM. COUPER, Ottawa, Ont.

MISCELLANEOUS NOTE.

HAIR SNAKES.—One day last Fall, a friend of mine, on stepping from his front door to the floor of the verandah, trod inadvertently upon a large spider. On removing his foot he perceived something, not naturally belonging to the spider, wriggling about on the ground, and on a closer inspection he discovered two minute snakes; these he brought to me, and I found them to correspond exactly with the description of the *Gordius*. They were, each of them, about two inches long, although when twisted up, as they were in tight knots, they occupied but a very small space. Their size was that of a horse-hair; their colour dark brown, almost black, the extremities being even darker than the intermediate portion.

Have you ever met with an instance of the *Gordius* making the body of a spider its temporary *habitat*? They are fresh-water *Abranchiata*, but my friend's house being near the river may possibly account for the fact of their being found in the body of the spider.—V. CLEMENTI, North Douro, Ont

NOTE BY ED. C. E.—We have never met with a *Gordius* parasitic in a spider, having generally found them in grasshoppers, crickets, &c., and once in a beetle; but we are not surprised to learn that a large spider—probably one of those so common under stones on the margin of rivers—should be so infested.

NEW ENTOMOLOGICAL WORKS.

CATALOGUE OF THE ORTHOPTERA OF NORTH AMERICA, described previous to 1867. Prepared by Samuel H. Scudder. Washington: Smithsonian Institution, October, 1868. 90pp. 8vo. Price 75 cents.

The Smithsonian Institution has already given a great impetus to the study of many orders of insects in America by its publication of Catalogues and Monographs; it is now continuing the good work by the issue of the volume before us, which calls the attention of students and collectors to a hitherto much-neglected order. This Catalogue is an alphabetical list, according to genera, of all the species of Orthoptera which have been described by authors as inhabiting North America or the West Indies; while giving references to all the authorities for a species, it does not take any notice of synonyms, but merely reports upon the present state of knowledge of the order. The Institution proposes to publish Monographs of American Orthoptera and requests the assistance of specimens from any part of the Continent.

PACKARDS' GUIDE TO THE STUDY OF INSECTS. Part 5, January 1869.
Price 50 cents.

This part contains a continuation of the order Lepidoptera, bringing down the account as far as the beginning of the *Geometridæ*. It is illustrated with two beautiful plates of *Telea polyphemus*, and about sixty wood-cuts. All our collectors of this favourite order ought to obtain at any rate the parts of this work that relate to it.

BOOKS RECEIVED.

The American Naturalist. Vol. I, No. 12, Feb. 1869. (Completing the volume).

Le Naturaliste Canadien, Bulletin des recherches, observations et découvertes se rapportant à l'histoire naturelle du Canada. No. 1. Decembre, 1868. Quebec.

The first number of this new magazine, the prospectus of which we noticed in our last issue, is now before us. It consists of 24 octavo pages, with a wrapper, and is illustrated by a wood-cut of the Beaver (*Castor fiber*). Besides much other interesting matter it contains a description of a new species of Hymenoptera,—*Urocerus tricolor*, Provancher, which is stated to bear some resemblance to *U. Cressoni*, Norton.

The Editor, in his introductory remarks, states that there are about a million French-speaking inhabitants in the Dominion of Canada, and hence infers that the time has come when they should have an organ in their own language specially devoted to Natural History. We certainly quite agree with him, and trust that his enterprise will be so abundantly successful as to utterly confute those prophets of evil who venture to characterise it as a fool-hardy and ruinous undertaking.

Proceedings of the Boston Society of Natural History. Vol. XII, Dec. 2, 1868.

Transactions of the American Entomological Society. Vol. I. No. 2. Containing numerous descriptions of new species of Hymenoptera by Cresson and Norton; Lepidoptera by Edwards, Grote, and Robinson; Coleoptera by Horn, Le Conte, and Zimmermann; and two splendid plates of Lepidoptera. Among the descriptions of new species of this last mentioned order, we notice two from Canada:—*Plusia Mappa*, G. and R. taken by Mr. Bowles at Quebec, and *Thecla Ontario*, Edw., taken by Mr Reed at Port Stanley. (C. E. No. 3. p. 21).

The Canada Farmer. Toronto. January, 1869.

The Maine Farmer. Augusta, Me. Dec. 26, 1868; Jan. 2, 9, 1869.

The Weekly N. Y. Sun. New York. Jan. 27, Feb. 3, 10, 1869.

W. Wesley's *Collection of (21) Catalogues of Scientific Works, Philosophical Apparatus, etc.* 81 Fleet Street, London, Eng.

The American Entomologist. St. Louis, Mo. Feb., 1869.

TO CORRESPONDENTS.

SUBSCRIPTIONS RECEIVED.—To Vol. I, from T. S. (per Mr. Reed); J. H. F., Detroit, Mich.; members subscriptions from W. O., and Rev. Prof. H., Toronto; N. H. C., Goderich; Rev. V. C., North Douro; B. B., and T. R., Ottawa.

SHEET CORK.—We have now on hand a large supply of sheet cork imported from the English manufacturer. Ordinary thickness for cabinets, 16 cents per square foot, extra thick, 24 cents.

ENTOMOLOGICAL ANNUAL FOR 1868.—It is proposed, should sufficient encouragement be given, to publish a Year Book of Progress in American Entomology, to be edited by Dr. A. S. Packard, jun. Dr. J. L. Le Conte will contribute a chapter on the Coleoptera; Mr. S. H. Scudder, chapters on the Butterflies and Orthoptera; Baron R. Osten Sacken, a chapter on the Diptera; Mr. P. R. Uhler, a chapter on the Hemiptera and Neuroptera; and the editor expects to receive aid from other entomologists. It is hoped it will prove a useful hand-book to every one interested in the study of insects. It will be published in 12mo size in the spring of 1869. An edition of five hundred will be printed, provided three hundred names can be secured. Will entomologists desirous of aiding in the publication of such an annual, send in their subscriptions in advance, that the means of publishing such a useful book be afforded at the outset? Subscriptions, Seventy-five Cents a copy, received by W. S. West, Peabody Academy of Science, Salem, Mass.

THE CANADIAN ENTOMOLOGIST is published on the 15th of each month by the Entomological Society of Canada. In consequence of the new Postal Law, which requires pre-payment of all Periodicals after January 1, 1869, we are constrained to make a slight change in the rates of subscription, as follows:—

To members of the Society, gratis.

To non-members (in Canada) 56 cents per vol., post-paid; two copies to one address \$1.

To subscribers in the United States, 62 cents per volume, free of Canada postage. The ordinary U. S. fractional currency may be sent.

To subscribers in Great Britain. Three Shillings per volume, post-paid. The amount may be sent in stamps.

Extra copies 5 cents each, 50 cents per dozen.

The *American Entomologist* (\$1), and the *Canadian Entomologist* (56 cents), will be furnished, post paid, for one dollar and twenty-five cents (\$1.25) per annum.

N.B.—Correspondence is invited respecting the habits, localities, occurrence, &c., of insects, as this journal is intended to be a medium for the recording of observations made in all parts of the country; insects for identification will be gladly attended to and returned when desired. Any contributions to the publication fund will be thankfully received and gratefully acknowledged.

The Canadian Entomologist.

VOL. I.

TORONTO, MARCH 15, 1869.

No. 8.

ENTOMOLOGICAL NOTES.

PAPER NO. IV.

BY W. SAUNDERS, LONDON, ONT.

Hesperia mystic, Edw.—Two eggs were deposited by a beaten female in a pill box, on the 20th of June, color pale yellowish green; strongly convex above, flattened below, and depressed or slightly concave in the centre of the flattened portion. The surface appears smooth under a magnifying power of forty-five diameters, whereas in those of *Hobomok*, reticulations are plainly seen under a power of twenty. The egg of *Mystic* appears faintly reticulate under a power of eighty diameters. One specimen produced the larva on the 28th, the other on the 29th.

Appearance when fresh from the egg. Length one-tenth of an inch; head large and prominent, black and shining. Body above white with a slight tint of yellowish brown, which is more apparent towards posterior segments; second segment nearly encircled above with a line of black—under surface white; feet and prolegs of the same color.

July 14th. Length one quarter of an inch. Head not very large but prominent, dark reddish brown. Body above pale green semi-transparent, darker along the middle of the body, much paler towards the extremities; second segment edged behind with a fine line of brownish black; on each side close to under surface is a fine line of dull greenish white. Under surface dull green with a faint yellowish tinge, feet and prolegs of the same color.

July 26th. Length .62 inch. Head large, dull red. Body above dull dark green with a faint tint of brownish red; downy with very fine short hairs scarcely visible to the unaided eye; second segment edged as before with brownish black; a dull whitish line along each side close to under surface. Below slightly paler; feet and prolegs pale, semi-transparent.

Appearance when full grown, August 7th. Length one inch. Onisciform. Head not large in proportion to the size of body, but prominent and much larger than second segment, dull reddish brown, edged with black posteriorly, downy with very minute whitish hairs.

Body above semi-transparent, dull brownish green, downy with fine whitish hairs similar to those on head, with a dorsal line and many dots over the surface of body of a darker shade; second segment pale whitish with a line of brownish black across the upper surface; terminal segments paler than the rest of body. Under surface slightly paler than upper with a semi-transparent glossiness; feet and prolegs whitish.

This larva was fed on grass, from a plant growing in a flower pot, only one attained its full growth—the other died while young. The full grown specimen when about to enter the pupa state, attached itself to a piece of coarse gauze with which the flower pot was enclosed to prevent the escape of the larva—and here while undergoing its change it was attacked from the outside by a large spider which completely emptied the fresh pupa case and destroyed it. No description had been taken of the pupa up to the time of this untoward event.

Hesperia hobomok, Harris—Several eggs were deposited in a pill box by a female specimen about the 17th of June. Color pale green, nearly round, flattened on the side that is attached to the box. Under a magnifying power of twenty diameters they appeared plainly reticulated with fine six sided markings, strongly resembling the cornea of a fly's eye. Two specimens hatched on the 27th—two more on the 28th. The young larva on finding its way out commenced to eat the egg shell at the centre above.

Appearance when fresh from the egg. Length one-tenth of an inch. Head large and prominent, black and shining. Body above creamy white with a yellowish tinge towards the posterior segments; second segment half encircled above with a transverse line of black; under surface, feet and prolegs, similar in color to upper surface.

This larva also feeds on grass, stationing itself about the inside of the leaves near the joints, drawing portions of the leaves together with silken threads, forming a rude case in which it secretes itself. When placed on a strong ribbed blade, the edges of which it cannot bend, it spins a few threads from rib to rib, and places itself behind the threads. *Mystic* and *Wamsutta* have similar habits.

On the 14th of July these specimens were unfortunately lost—at this time they were about three-eighths of an inch long and very closely resembled *Mystic* of the same age.

Hesperia wamsutta, Harris—Several eggs were deposited by a beaten female July 10th, Egg pale greenish yellow, strongly convex above, flattened at the place of attachment; flattened portion slightly concave. Surface appears faintly reticulated under a magnifying power of forty-five diameters. On the 21st and 22nd the eggs grew darker in color, the larva appearing on the 24th.

Appearance of larva fresh from the egg. Length one-tenth of an inch. Head large and prominent, of a shining black color. Body above dull brownish yellow, dotted with black; examined with an eye-glass these black dots are very faint, but under a magnifying power of forty-five diameters they appear very distinct, about ten or twelve on each segment, each emitting a single, rather long, brownish hair; second segment with a ring of brownish black encircling it above. Under surface rather paler than upper, slightly hairy; feet and prolegs partake of the general color.

These fed also on grass, but I was unsuccessful in my attempts to rear them; they all died while quite young.

NORTHERN INSECTS.

BY WILLIAM COUPER, OTTAWA, ONTARIO.

PAPILIO ASTERIAS, *Fab.*—A specimen of this butterfly was seen by me at Natashquaun, on the 24th June. On the 4th July, I found it common at a place further down the coast, called Musquaro. The same species occurs in Newfoundland.

PIERIS FRIGIDA, *Scudder.*—This butterfly is common at Natashquaun, where it appears about the 15th June. I am of opinion that it is double-brooded, as I noticed fresh specimens on my return to Mingan on the 16th July. It occurs on the whole of the south as well as the eastern coast of Labrador, where Mr. Scudder procured the species.

COLIAS INTERIOR, *Scudd.*—Captured a single specimen on the 22nd July, at Mingan. It is now in the collection of B. Billings, Esq., of this city.

ARGYNNIS CHARICLEA, *Ochs.*—On my arrival in Labrador, this was the first species that attracted my attention. First, on the 30th May at Attepetal Bay, where it was making its first appearance. Afterward at Natashquaun and other points down the coast, where it was extremely common. It is the *A. Boisduvalii* of Mr. Scudder's Labrador List.

ARGYNNIS BOISDUVALII *Sommer*—Mingan is the only locality where I noticed this butterfly. I captured a few specimens on the 22nd July. Mr. Scudder informs me that this species is closely allied to his *A. Montinus* from the White Mountains. It is not the *A. Boisduvalii* of his Labrador List.

LYCENA LYGDAMUS, *Doubl.*—I captured a few specimens of this pretty butterfly on the 4th July, at Musquaro, where they were common. Not having a net or collecting-box at the time, I had to take them as best I could.

LYCAENA SCUDDERI, *Edw.*—This species was noticed on the 1st June, at Little Watchsheshoo Harbor, but it became common along my route down the coast, and I am inclined to think there are two broods between the former date and the end of July.

LYCÆNA LUCIA, *Kirb.*—Common from the 1st June to the end of July. This species was first noticed by me at Watchsheshoo, early in June, when the weather was cold. They could then be easily taken by the hand.

At Mingan (July 22nd), I saw one specimen of *Argynnis* (probably *A. Aphrodite*, Fab.), but was not able to capture it. During my stay on the coast, I did notice a single species of *Hesperidæ*. If the family are represented in Labrador, I would have noticed some of them between the months of May and July. I visited ten rivers which enter the sea from the northern interior of the country, and I explored some of these river banks from five to ten miles inward, but found little of Entomological interest. It is only on the coast, and in the immediate neighbourhood of settlements that I was successful in procuring the material which I brought home. At Watchsheshoo, on a July evening, I noticed a species of *Sphinx*.

Mr. Cresson, of Philadelphia, thinks that I have been on the dividing line between the Canadian and Labrador faunæ. He is, no doubt, correct regarding the Lepidoptera, as the flora of the localities visited by me, are mainly sub-arctic, intermixed with Canadian varieties, therefore where the former predominate, it is reasonable to expect a local fauna. But it is not the case with Coleoptera, which, as I formerly stated, do not show any visible variety from those frequenting the district of Quebec.

I took two varieties (green and purple) of *Cicindela longilabris Kirby*, at Natashquaun, where they were uncommon. I also procured some species of *Hymenoptera* and *Diptera* which are not determined.

MISCELLANEOUS NOTES.

A NEW THORN-LEAF GALL.—The European thorn *Crataegus crus-galli* Linn. has been cultivated for many years at Quebec, where it hedges gardens and farms in the vicinity of the city. The leaves of this thorn appear early in May, and about the beginning of June; they are attacked by an insect which deposits its eggs in the fibre of the leaf. The galls are small, each the receptacle of a single larva, and from one to four may be seen on many of the leaves. These galls are composed externally of fibrous denticulated sprouts, which rise from the face of the leaf. The tops of the sprouts are beautifully ornamented with knobs of a reddish color. On separating the sprouts which enclose the mouth of the gall, a larva may be seen (in June) occupying a smooth cell in the same vertical position as *Salicis strobiloides* Osten Sacken, in the pine-cone gall of the willow. I have watched and tried to rear the larva from these thorn-leaf galls, but have not been successful in procuring the imago. In 1866, I sent specimens of the galls to Wilson Armistead, Esq., of Leeds, England, who has devoted upwards of twenty years to the

study of the British galls, and he informed me that my thorn-leaf gall was quite new to him. I found it common on thorns near Cataraqui. Can any of my Quebec entomological friends give me further information regarding it?—W.M. COUPER, Ottawa, Ont.

HAIR SNAKES.—Dr. H. Hagen, of Cambridge, Mass., the well known Neuropterist, has communicated to our esteemed friend, Mr. Saunders, the following note on these curious creatures:—"Hair snakes in spiders are not so often observed. Haldeman and Leidy describe them as *Mermis robusta*, found in *Lycosa scutulata*, in North America (Proceed. Acad. Phil. vol. x., p. 58). Prof. Grube observed *Gordius aquaticus* in *Drassus fuscus*, Latr. in Prussia, two specimens in one spider. Prof. Siebold two *Mermis* in one *Micryphanti bi-cuspidatus*, Koch, in Bavaria. Duval, in Germany, observed one Hair Snake in *Miranda ocropegia*, Koch. Latreille one in a spider and one in *Phalangium cornutum*. Prof. V. Baer one in *Phalangium opilio*. You will find these observations in Prof. Von Siebold's Memoires in the Stettin Entom. Zeitung."

—♦—

COLEOPTERA TAKEN IN THE NEIGHBOURHOOD OF LONDON, ONT.,
DURING THE SEASON OF 1868.

The following account is given in the hope of affording encouragement to youthful or intending collectors, and as some slight evidence of what a beetle-bottle and a nest of pill boxes, aided by vigilant eyes and a little perseverance, will procure for one who has so little leisure for Entomology as I have.

The list is compiled from a daily journal. [We regret that our limited space forbids our publishing Mr. Reed's list *in extenso*; the enumeration of the number of species will, however, testify to the success that has rewarded his diligence.—ED. C. E.]

Cicindelidæ, 6 species, April to August.

Carabidæ, 26 species, April to August.

Dytiscidæ, 5 species, July.

Hydrophilidæ, 5 species, April and July.

Silphidæ, 3 species, May and July.

Staphylinidæ, 3 species, May and July.

Histeridæ, 3 species, April, May and July.

Nitidulidæ, 4 species, April to July.

Cucujidæ, 1 species, April, rare.

Dermestidæ, 2 species, April and June.

Byrrhidæ, 1 species, June, very rare.

Lucanidæ, 4 species, May to July.

Scarabæidæ, 15 species, April to September.

Buprestidæ, 6 species, May to August.

- Elateridæ*, 7 species, May to July.
Lampyridæ, 7 species, April to July.
Cleridæ, 3 species, April, May and August.
Ptinidæ, 1 species, July, rare.
Tenebrionidæ, 8 species, April to July.
Lagridæ, 1 species, June, rare.
Pyrochroidæ, 2 species, May and July.
Anthicidæ, 1 species, June.
Melandryidæ, 1 species, June.
Mordellidæ, 2 species, May to July.
Meloidæ, 1 species, August and September.
Oedemeridæ, 1 species, July, rare.
Scolytidæ, 3 species, April to June.
Curculionidæ, 9 species, April to August.
Cerambycidæ, 26 species, April to September.
Chrysomelidæ, 13 species, April to August.
Coccinellidæ, 10 species, April to September.

In addition to the above 180 species, which belong to 129 genera, and 31 families, I collected over 130 other species which want of leisure has hitherto prevented my determining. Many of the list were determined from the splendid collection of my friend Mr. Saunders.—E. B. REED, London, Ont.

MEETING OF THE ENTOMOLOGICAL SOCIETY.

A meeting of the Society was held on the 16th ult., in the rooms of the Canadian Institute, Toronto. The following gentlemen were unanimously elected Members :

CHARLES E. WOOLVERTON, Esq., Grimsby, Ont.

Dr. W. E. MILWARD, " "

EDWARD BOWSLAUGH, Esq. " "

A vote of thanks was passed to W. W. Saunders, Esq., of Reigate, England, for his very handsome donation of twelve boxes of European Diptera, sent by F. Walker, Esq., and received through the Smithsonian Institution, Washington, D. C.

NOTES ON CANADIAN LEPIDOPTERA.

PART II.

BY THE EDITOR.

In our previous notes we brought down the catalogue of corrections and additions to our Society's lists of Canadian Lepidoptera as far as the end of the Bombycidæ; we now come to the great family of Noctuidæ, in which there is still open so large a field of work for the American student.

In a late number of the Transactions of the American Entomological Society (vol. ii. pp. 67-88), Messrs. Grote and Robinson give a long list of errors that they have detected in our friend Mr. Walker's British Museum Catalogues of Lepidoptera. It appears that, during a recent visit to Europe, these gentlemen took the opportunity of examining the Museum collections, and comparing the North American specimens with material that they had brought with them for the purpose, and were thus enabled to identify many of Mr. Walker's species, and decide upon the merits of others. From our own experience of the insufficiency of many of the descriptions in these catalogues, and our having met with occasional errors in them, we feel compelled to accept this list of emendations, especially as its authors are well known as the chief and almost the only American authorities on this difficult family of Moths. We do not, however, wish to be understood as subscribing entirely to their strictures upon Mr. Walker's works, for we hold that a great deal is due to him for the enormous mass of material that he has brought together in them, and the immense amount of labour that he has bestowed upon their compilation. And who indeed can wonder that some errors should be detected in so vast a work, which perhaps no single individual should have been called upon to undertake?

In order to render our notes as brief as possible, we give the following names of species that are to be *struck out* of our Society's List No. 2, referring the reader to Messrs. Grote and Robinson's paper for the reasons in most cases:—

Acronycta longa, Guén.—This species was inserted in our list on the authority of the Brit. Mus. Cat. (ix. p. 60), which states that a supposed variety of it was taken at Orillia, by Mr. Bush. This variety has since been described as a distinct species by Mr. Grote (Pro. E. S. Phil. ii. p. 437, pl. 9, fig. 3), under the name of *A. Noctivaga*. We took the insect at Cobourg, in June 1865.

Mamestra ordinaria, Walk.; *M. unicolor*, Walk.; *Apamea insignata*, Walk.; *A. demissa*, Walk.; *Miana undulifera*, Walk.; *Graphiphora expansa*, Walk.; *Xanthia spurcata*, Walk.; *Hadena contenta*, Walk.; *Xylina contraria*, Walk.; *Anthaeia rivulosa*, Guén., is the same as *A. marginata*, (Haw.) Grote; *Homoptera obliqua*, Guén., a supposed variety of this species taken by Mr. Bush at Orillia (C. B. M. xiii. 1054) is a rubbed specimen of *H. minerea*, Guén.; *Homoptera calycanthata*, Smith (Bethune, Can. Jour. 1865, p. 251), according to Grote and Rob., is *Zale horrida*, Hübn. Not having access to Abbot and Smith's work, our erroneous determination was derived from Guénee's and Walker's brief descriptions, the latter of whom had mistaken *Z. horrida* for *H. Calycanthata*. *Hyppena caecalis*, Walk.; *Ennychia glomeratis*, Walk.

Calpe Canadensis, Bethune.—This species is stated by Grote and Rob. to

be the same as *Plusiodonta* (?) *purpurascens*, to which (correcting the generic name to *Calpe*) they give the priority. We claim, however, that our name, *C. Canadensis*, do stand, as our description was communicated to the Ent. Soc. Philada. on Feb. 13, 1865, and published in their proceedings for March, 1865 (vol. iv. p. 213), whereas Mr. Walker's description appeared subsequently in the Brit. Mus. Cat. (xxxiii. p. 842), which bears date "July 1, 1865."

(To be continued.)

BOOKS RECEIVED.

Le Naturaliste Canadien (No. 2, Janvier, 1867), contains several valuable and interesting papers, among which we may mention those on the Potatoe Disease (illustrated), the Beaver, the Study of Natural History, &c. We are pleased to notice the valiant manner in which the talented Editor takes up the cudgels in defence of his favorite science, and the summary manner in which he deals with the errors of non-scientific journalists, following in this way the notable example of our esteemed contemporary, the *American Entomologist*.

Proceedings of the Boston Soc. Nat. Hist. Vol. xii., Jan. & Feb., 1869.

On some Insects collected in Madagascar by Mr. J. Caldwell, and Characters of a new Genus and Species of Chalcidites. By F. Walker, F.L.S., London, Eng.

The Maine Farmer. Augusta, Me., Jan. 23, 30, Feb. 6, 1869.

The Canada Farmer. Toronto, Feb., 1869.

The N. Y. Sun. New York, Feb. 17, 24, 1869.

Notes on a remarkable variety of Papilio Turnus, &c. By W. H. Edwards, Coalburgh, West Va.

TO CORRESPONDENTS.

SUBSCRIPTIONS RECEIVED.—To Vol. i., from J. A. U. B., Montreal (with Am. Ent.); J. P. J., and S. B. D., Keytesville, Mo. (per C. Veatch). Members' subscriptions from Rev. W. A. J., Weston; J. M., Belleville; J. M. J., Halifax, N.S.

DONATION TO PUBLICATION FUND.—W. Saunders, Esq., of London, Ont., has very kindly sent us a donation of \$2, for which we beg him to accept our best thanks.

C. S. M., Boston, Mass.—We have sent you the back Nos. of the *Canadian Entomologist*. Your note was our first intimation of your being a subscriber, Mr. Studley not having informed us of the fact.

W. C., Ottawa.—Sets of the *Canadian Entomologist* sent to Dr. V. C., and the Parl. Lib., as desired.

C. V. R., St. Louis, Mo.—Did not succeed in rearing the Strawberry Leaf-roller, as the specimens had become exhausted before they reached us. Shall try again. Believe them to be your *Anchylopera fragaria*. Many thanks for the photo.

The *American Entomologist* (\$1), and the *Canadian Entomologist* (56 cents), will be furnished, post paid, for one dollar and twenty-five cents (\$1.25) per annum.

All communications, remittances and exchanges, should be addressed to

"THE REV. C. J. S. BETHUNE, Credit, Ont., Canada."

The Canadian Entomologist.

VOL. I.

TORONTO, APRIL 15, 1869.

No. 9.

ENTOMOLOGICAL NOTES.

PAPER NO. V.

BY W. SAUNDERS, LONDON, ONT.

In my last paper were concluded all the observations I have at present to publish, regarding the rearing of butterflies from the egg. Before passing on to relate some experiments of a similar character with moths, I propose to give what further notes I have made in this family from captured larvæ, partially or fully grown.

Papilio Troilus.—Found feeding on spice bush (*Laurus Benzoin*), August 3rd, full grown. The larvæ, as its habit is, had drawn together with silken threads one of the leaves, constructing thus a rude case in which it secreted itself during the day.

Length $1\frac{1}{2}$ inches, body thickest from third to fifth segment.

Head rather small, flat in front, slightly bilobed, dull flesh color with a faint tinge of brown.

Body above bright green, a yellow stripe across anterior part of second segment, edged behind with dull black. On fourth segment are two prominent eye like spots of dull yellow or yellowish buff, encircled with a narrow ring of black, and a large pupil of black filling most of the lower portion. The posterior part of this pupil is surrounded by a shining bluish black ring, the anterior portion of which reaches a little beyond the middle of the pupil. There is also a line of black in front, extending nearly across the yellow, and a pale pinkish spot above, margined with a slightly darker shade. On fifth segment are two large irregular spots of the same color, pale buff, encircled with a faint ring of black, and having a dull pink spot on the anterior portion of each. These latter spots are nearer to each other than those on fourth segment, a portion of the space between fifth and sixth segments is deep black; each segment from sixth to eleventh inclusive has four blue dots margined with black, those on seventh, eighth and ninth segments being largest. On each side, close to under surface, is a wide yellow stripe, gradually softening into the green above and edged below with blackish

brown. Immediately below the spiracles is a row of blue dots, margined with black, one on each segment from sixth to twelfth inclusive.

Under surface dull pale greenish or yellowish white, having a decided reddish tinge as it approaches towards the yellow stripe on sides. Feet and prolegs partake of the general color.

Papilio Turnus—Larvæ found feeding on cherry, July 14th. Length $1\frac{1}{2}$ inches.

Head rather large, slightly bilobed, reddish brown sprinkled with very short white hairs.

Body above green, of a slightly darker shade on anterior segments, paler on sides of body, on which there is a whitish bloom produced by minute white dots with small short hairs of the same color issuing from them. Anterior segments of body wrinkled. On the anterior edge of second segment is a raised yellow fold, slightly overhanging the head, and on each side of fourth segment is an eyelike spot nearly oval in shape, yellow enclosed by a ring of black, centered with a small elongated blue dot, which is also set in black and has above it on each side a black line, nearly crossing the yellow spot. On posterior portion of fifth segment is a raised yellow fold, bordered behind with rich velvety black, the latter visible only when the larva is in motion; on the terminal segment is a similar fold, flattened above, with a slight protuberance on each side. On fifth segment in front of the yellow fold, are two blue dots, one on each side the dorsal line; there are also faint traces on hinder segments of a continuation of these dots in longitudinal rows.

Under surface of a paler green than upper, with a whitish bloom, prolegs of the same color, feet tipped with brown.

As the larva approaches maturity and is about to change, the color of body grows much darker, becoming dark reddish brown, the sides nearly black. The minute whitish granulations and the blue dots become more distinctly visible, giving the larva a very different appearance.

Both *Troilus* and *turnus* winter in the chrysalis state. The first specimens of *Troilus* appear with us about the middle of June, becoming more abundant early in July. I think there is only one brood, but in this may be mistaken. *Turnus* I have taken on the wing from the middle to the latter end of May, but it becomes much more plentiful during July, and I incline to the opinion that there are two broods during the season.

Danaïs Archippus.—Larva taken full grown, July 18th, feeding on different species of *Asclepias*.

Length one inch and three quarters.

Head yellow with a triangular black stripe in front and another of a similar shape above.

Body above striped transversely with alternate black, yellow and white stripes—the white occupying the body of each segment, with a wide black stripe down the centre—the yellow chiefly between segments. On the third segment are two long black fleshy horns, and on the twelfth two others of a similar character, but shorter and not quite so robust.

Under surface black with a greenish flesh color between most of the segments, feet black, tipped with greenish, all excepting the posterior pair having a large white spot at their base outside.

The chrysalis is about an inch long, cylindrical, bright green, with two oval gold spots in front, one on each side the antennæ. A row of eleven gold dots, varying in size, encircles the lower portion; and a second row above of closely set gold spots, almost a continuous line edged anteriorly with black, is situated about the base of the moveable segments. Base of chrysalis black with several black dots about it.

I have never met with the larva of any *Argynnis* or *Melitæa* at large, although diligent search has often been made for them. The larva of *A. aphrodite* has been found by my esteemed friend D. W. Beadle, of St. Catharines, feeding on the wild violet in the early part of June. On the 30th of June, I once found attached to the under side of a log, a pupa of *A. cybele*, which produced the imago in two or three days afterwards. The full grown larva of *aphrodite* and *cybele*, may be looked for between the 5th and 15th of June. According to Mr. Beadle, they secrete themselves during the day under pieces of chip or rubbish.

Vanessa Antiopa.—Larva taken full grown June 20th, feeding on willow.

Length two inches. Head medium size, strongly bilobed, black with a few whitish hairs and roughened with small black tubercles. Body above black, thickly covered with small white dots, from each of which arises a fine whitish hair. A dorsal row of eight irregular spots or patches of a bright brick-red color, with two faint blackish dots on each. Spines black, rather long and slightly branching, four each on second and third segments, six on fourth and fifth, and seven on each from sixth to twelfth inclusive—the seventh spine on sixth segment is very small. Terminal segment with two pairs of short spines, one pair behind the other. Under surface similar to upper, with rather fewer white dots and hairs—feet black, lighter colored at base—prolegs dull red, with two small black dots and a few whitish hairs on the outside of each, excepting the terminal pair which are black, tipped with red.

This species passes the winter in the imago state, they appear with the first warm sunny days of spring, hovering in numbers about the sappy stumps of recently cut trees. About the middle of June, the imago becomes

very scarce, then disappears until the advent of the second brood early August. I have several times kept the chrysalis of this insect over the winter, but they have invariably produced ichneumons in the spring.

Vanessa Milberti.—A description of the larva of this species was first published by myself in the second volume of the Proceedings of the Entomological Society of Philadelphia, page 28, but as this was unsatisfactory from its brevity and incompleteness, I have re-described it with fuller details.

Larva taken nearly full grown July 26th, feeding on nettle.

Length one to one and a quarter inches, cylindrical.

Head black, thickly covered with fine brownish white hairs, and sprinkled with many minute whitish dots.

Body above nearly black, thickly sprinkled with small white dots and fine whitish hairs, giving it a greyish appearance. Each segment, excepting the second has a transverse row of branching spines—on the third and fourth segments, four—fifth segment six, and from fifth to terminal segments, seven. Terminal segment with two pairs, one pair behind the other. A greenish yellow lateral line, close to under surface, and above this a second broken line of a brighter orange yellow shade. All the spines and their branches are black, excepting the lower rows on each side from fifth to twelfth segments, these springing from the greenish yellow line are of a greenish yellow color.

Under surface dull greenish, with minute whitish dots. A wide central blackish stripe covering nearly the whole under surface of anterior segments—feet black and shining, prolegs green.

This insect I believe passes the winter in the imago state. I have taken it on the wing as early as the 24th April. It is double brooded; the first brood of larvæ reaching maturity about the middle of June, appearing in the imago state about ten or twelve days afterwards. The second brood of larvæ are full grown during the last week of July, and appear in the perfect state early in August.

Vanessa interrogationis.—Larvæ of this species full grown and partially grown were found together on the 7th August, feeding on the hop.

Description of young larva. Length half an inch. Head black. Body above black, with transverse rows of branching spines, those on third, fourth and terminal segments black, with a row of the same color along each side close to under surface. All the other spines pale whitish.

Under surface nearly black with dots of a pale hue.

Full grown larva. Length one and a quarter inches. Head reddish black, flat in front, somewhat bilobed, each lobe tipped with a tubercle, emitting five simple black pointed spines. Head covered with many small white tubercles mixed with a few blackish ones.

Body above black, thickly covered with streaks and dots of yellowish white. Second segment without spines, but with a row of yellowish tubercles in their place. Third segment with four branching spines all black, with a spot of dark yellow at their base. The fourth segment has also four spines; but all the others have seven excepting the terminal which has two pairs, one situated behind the other. Spines yellow, with blackish branches, excepting the terminal pair, which are black, and a row along each side near under surface of a reddish color.

Under surface yellowish grey, darker on the anterior segments, with a dark central line and many small black dots. Feet black and shining, ringed with dull whitish. Prolegs with a dull reddish tint.

This larva feeds also on the Elm. Two broods of the perfect insect appear during the season; the first late in June, the second in August. I think the winter is passed in the imago state, although I have never met with the larva early in the season.

NEST OF CRABRO SEXMACULATUS, SAY.

BY WILLIAM COUPER, OTTAWA, ONT.

To your readers who study HYMENOPTERA, it may be interesting to learn

something of the economy of a little Bee which was found at Quebec, by Mr. N. H. Cowdry, on the 11th April, 1865.

The wood cut represents tops of raspberry canes, the pith of which was bored into, and emptied out by the parent Bee.

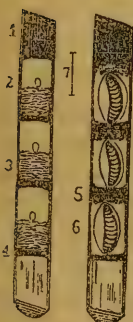
1. Orifice which was closed with some kind of vegetable substance. 2. Egg* of Bee attached to Pollen. 3. Pollen, all

of which, under the microscope, appeared to have the same form and color (yellow), evidently mixed with honey. 4.

Vegetable partition† on which the pollen rests, dividing one cell from another. 5. Ejectamenta of larva. 6. Larva. 7.

Length of larva prior to change. As soon as the larvæ consume the equal quantity of food provided by the parent, each

about the same time transforms into a pupa—but before this change, the force of nature constrains it to be further secured within the walls of its cell, and the final work of the larva, is to spin a thin silken cocoon wherein the



* On splitting open one of the canes on the 11th April, five cells contained pollen, and a flesh colored egg rested in a sub-vertical position on the surface of each cell.

† "It is necessary for the proper growth of her progeny, that each should be separated from the other, and be provided with adequate food. She knows exactly the amount of food which each grub (*larva*) will require during its growth; and she therefore does not hesitate to cut it off from any additional supply."—*Insect Architecture*, vol. I. p. 52.

pupa remains until it attains the parent form, about the end of June. Rennie informs us that the Carpenter Bee (*Xylocopa violacea*) of Europe "occupies several weeks in these complicated labors," and that as each egg "is separated from the other by a laborious process—the egg which is first laid will be the earliest hatched; and that the first perfect insect being older than its fellows in the same tunnel, will strive to make its escape sooner, and so on of the rest. The careful mother provides for this contingency. She makes a lateral opening at the bottom of the cells. Réaumur observed these holes in several cases; and he further noticed another external opening opposite to the middle cell, which he supposed was formed, in the first instance, to shorten the distance for the removal of the fragments of wood in the lower half of the building." It is apparent that this mode of exit does not occur in the raspberry canes occupied by the Canadian species—and the fact that all the eggs examined in a series of cells, on the 11th of April, were of equal freshness, induces me to state that I am not satisfied with Rennie's statement as to its being obvious that Bees occupying the lower cells will be hatched before those in the upper. There may be, in some species, a short lapse of time, between the perfection of each individual in a series of cells, but it is of little consequence, and does not incommode them. It appears to me that they make little effort to escape until the uppermost cells are vacated. I have seen a species of *Megachile* two days cutting through its cocoon, and it seemed in no hurry to leave its cell; while during this time other specimens that occupied the same group of cocoons, came forth, one after another.

I sent this raspberry boring Bee to Dr. Packard, and I quote from his letter dated May 8th, 1866, as follows:—"I am glad to trace the habits of this species (*Crabro sexmaculatus*, Say). I only wish I had a larva and pupa. They build often in the empty hollow stems of elders and raspberries, occupying and refitting the holes excavated by *Ægerians* and other borers." It will be seen from my description of the nest and larva-food of this species, that it does not agree with the usual habits of *Crabronidæ*, the food of the larvæ of our genera of the latter family, as hitherto recorded, consists of *Articulata*. The Bee obtained from the raspberry canes, is a small obscure insect, a little over two-fifths of an inch long, and the only specimen in my possession is now broken, having lost the abdomen. I do not remember noticing spots on any of the specimens, and I am satisfied that the one in my cabinet is a duplicate of that sent to Dr. Packard. Not having Say's description, I am at a loss to understand his reason for naming this insect *sexmaculatus*. Is the male spotted, or is it possible that there are two kinds of females, as occur among the *Apidæ*. If the latter is the case, has our *Crabro* one with six spots, and the other spotless? These questions are not penned with a

view of disputing its identity. The words previously quoted are conclusive that I communicated to Dr. Packard what I then knew of its history. Thus, then, we have discovered another species of the Parasitic Genus *Crabro*, generally known as Sand Wasps, imitating the habits of *Prosopis** and *Sphecodes* among the *Andrenidæ* and *Ceratina*†, *Xylocopa*, and other wood-boring or what are termed Carpenter Bees among the *Apidæ*. With increased knowledge, I have no doubt, but that other species, hitherto classed among the Parasitic Hymenoptera, will be found making nests in similar situations, and provisioning the cells with vegetable substances.

NOTE BY ED. C. E.—Say (Ent. Works i. p. 230) describes the female *C. 6-maculatus* as "Black, tergum with three yellow spots on each side."

MISCELLANEOUS NOTES.

MR. COUPER'S THORN-LEAF GALL.—In No. 8 of the CANADIAN ENTOMOLOGIST, Mr. Couper requests additional information respecting a Gall found by him on *Cratægus crus-galli*, which is said by him to be a "European thorn." The common European white thorn, by the way, is *Cr. oxyacantha*, and *Cr. crus-galli* is an American species, according to Gray; so that I scarcely know what thorn he refers to.

As to the Gall briefly described by him, I think it must be identical with a Cecidomyioidous leaf-gall, which grows very sparingly near Rock Island, Ills., U.S., on *Cr. tomentosa*. That Mr. Couper may judge for himself, I copy the description of my gall from my Journal.

"GALL CRATEGI BEDEGUAR.—A sub-globular gall, about 0.50 inch in diameter, growing on the main-rib of the leaf of *Cratægus tomentosa*, generally below, but sometimes above. It branches out into long slender sprangling filaments, which are green and very often tipped with rosy, resembling those of the "bedeguar"

* "*Prosopis*, though destitute of the usual apparatus for collecting honey, has been recently proved a honey producer nevertheless. Its nest has been discovered in tubes formed in the main stems of the bramble, and in the nest, filmy cells, containing liquid honey. *Sphecodes*, though without the usual polleniferous organs, and consequently thought to be Parasitic, has been watched by that indefatigable entomological observer, Mr. F. Smith of the British Museum, while in the act of forming its burrow; an act which appears to afford conclusive evidence in favor of the non-parasitic habits of this genus of Bees.—Humphrys, in "*The Intellectual Observer*," May, 1862.

† Spinola tells us "that one evening he perceived a female *Ceratina* alight on the branch of a bramble, partly withered, and of which the extremity had been broken; and after resting a moment, suddenly disappear. On detaching the branch, he found that it was perforated, and that the insect was in the very act of excavating a nidus for her eggs. He forthwith gathered a bundle of branches, both of bramble and wild-rose, similarly perforated, and took them home to examine them at leisure. Upon inspection, he found that the nests were furnished, like those of the same tribe, with balls of pollen kneaded with honey, as a provision for the grubs."—*Annales du Muséum d'Histoire Naturelle* x. 336.

gall, common on the Rose in England. The larva is cecidomyioidous, of an orange color, with a dark Y-shaped breast-bone, and as usual inhabits a cell with smooth internal walls to it, in the middle of the gall. Occurred July 19th."

I am acquainted with three other Cecidomyioidous leaf-galls on *Cratægus*, one of which (*Crategi plica*, Walsh M. S.) grows on *Cr. crus-galli*, and two (*Cr. limbus*, Walsh M. S. and *Cr. globulus*, Walsh M. S.) on *Cr. tomentosa*, besides a singular Acaridous leaf-gall, which looks like a slender pale-green worm, wriggling through the crinkled parenchyma of the dark green leaf, and which is found locally, but in profuse abundance, both on *Cr. tomentosa* and on *Cr. crus-galli*. The mite-larvæ of this last, to which I have given the M. S. name of *Cr. vermiculus*, are remarkable for being of a beautiful rosy color.

It was from the above-mentioned gall *Cr. plica*, that I obtained great numbers of the larvæ and imagoes of *Anthonomus crategi*, Walsh, which is inquilineous in this gall, as I have stated in my paper on Willow-galls, *Pro. Ent. Soc. Phil.* VI. p. 266.—BEN. D. WALSH, Rock Island, Illinois, March 22, 1869.

MELITÆA PHAETON.—Mr. W. H. Edwards (Coalburgh, West Va.), writes, "I should like to know from Mr. Billings, what are the plants which he says might be common to the Ottawa district and to this, and on which I might find the larva of *M. phaeton*. The figure of the larva of Phaeton in Packard's *Guide*, does not represent the species or the genus, but something of the Aretian type."

Mr. B. Billings (Ottawa, Ont.), replies as follows:—"The plants referred to by Mr. Edwards, are *Thalictrum cornuti*, *Chelone glabra*, *Cypripedium pubescens*, and *C. spectabile*. They are all northern, but range southward, and the last may be rare. *Myrica gale* (a shrub), ranges along the mountains in Virginia, and it is not impossible that *Cornus stolonifera* may be found similarly situated.

"THE CANADIAN ENTOMOLOGIST, No. 7, recites a note by Dr. Packard, in which he states that the larva of *M. phaeton* feeds upon the Aster, Hazel, and *Viburnum dentatum*. The *Viburnum* specified, is common here in swamps, and six other species of the same genus are common in the neighbourhood. I saw none of them, however, in the enclosure where I met with *M. phaeton*, but on the outskirts of the thicket, about forty rods from the swamp, I saw several plants of *V. Lentago*.

"As for Asters and Hazel, I do not recollect having seen them. I am confident that they do not grow in the swamps, but no doubt they occupy the high land, or intervening thicket, at no great distance from it. Our only species of Hazel is *Corylus rostrata*; the species of Aster are numerous, and as they are everywhere abundant in thickets, they must surely grow here.

"Whatever the larva feeds upon, it will not have much to eat for the next six weeks, as the whole country is covered with snow yet (April 5), two to three feet deep, and I do not expect to see the last of it in the swamps till the end of May!"

SNOW FLIES.—The first mild days, about the beginning of March, every winter, bring out, on the banks of the River Credit, an immense number of neuropterous insects, called in this neighborhood "Snow Flies," from their habit of crawling over the surface of the snow, and appearing when it is even two or three feet deep. Their proper name is, I think, *Capnia Pygmæa*, Burm. (*Perla Nivicola*, Fitch, "Winter insects of E. New York"—a work that I have not seen); a technical description of them is given in Hagen's "Synopsis of N. American Neuroptera," p. 32. They are of a shining black colour, with dusky black-veined wings, which are rudimentary in the ♂, but rather ample in the ♀; the antennae are rather long, with numerous articulations; the abdomen is terminated by two long setæ; the ♀ is usually about double the size of the ♂, but the individuals of each sex vary very much in size, some males being under a-fifth of an inch in length, while some females are over half an inch. I once found a few individuals crawling on the deep snow near a stream back of Cobourg, on March 1, 1865; but in this neighborhood they literally swarm for some weeks on the bridges, trees, &c., and on the snow about the river, even coming into houses some seventy feet above the water. In 1867, the first specimens appeared on the 26th of February; in 1868, on March 8th. This year I saw the first specimen on March 2nd, a bright, mild, thawing day, snow about two feet deep on the level; March 7th, a few more were seen; March 21st, quite numerous; April 10th, still plentiful. Their early appearance, long before the departure of the snow, must afford a welcome supply of food to the small birds that anticipate the advent of spring.—C. J. S. B., Credit, Ont.

THE ALDER-BUD GALL.—Another gall is common at Quebec on the Alder (*Alnus incana*, Willd). These galls are formed by the insect early in June, when the young buds are springing from the branches. I have counted from three to six orange-colored larvæ in each of these galls. They occupy separate cells between the thick young leaves, which are thus deformed by the puncture of the insect, forming a gall either round or semi-conical. One of these galls, about twelve months in my possession, was lately opened. It contained four orange-colored larvæ, one pupa of the latter, and one Inquiline of a brilliant green color. I sent this gall to Mr. Armistead, who informed me that although larger, it is similar to one on the European Hazel. I intended to have traced out the insect that produced them, but having to go

to Labrador during the summer of 1867, I had not another opportunity to obtain specimens. In order to further investigation, I may mention that this gall will be found in June, in a wood north-west of Spencerwood.—W. COUPER Ottawa.

HAWTHORN FRUIT MINER.—About the end of June, 1867, I attempted to rear a species of *Micro-Lep.*, which I discovered mining the fruit of an uncultivated Hawthorn, growing on the Island of Orleans, opposite Quebec. A lot of the Haws were collected, and carelessly thrown into a box containing the pith of a plant. Some days afterwards, on examining the Haws, I noticed that they had become dry, and several larvæ were dead. A few that were larger and better fed, took to the pith, into which they bored, and changed. The insect came forth, but there was something wrong; not one expanded its wings. As the chrysalis of this little moth is different from any form that I have ever seen, I give as perfect a description of it as could be obtained at the time:—Flesh-colored, excepting the fore part of the head, which is reddish. A longitudinal black line on the dorsal region. Body consists of about nine rings. The antennæ extend to the apex of wing sheaths, terminating in sharp prominent divergent points. Directly behind the points of the latter, are two conspicuous appendages, having bur-like tops, and by which I found the exuvia attached to the wall of its hiding-place. Length $\frac{2}{5}$ th inch. Can any of your correspondents inform me to what genus this *Lep.* belongs?—WM. COUPER, Ottawa.

NEW WORK ON THE BUTTERFLIES OF NEW ENGLAND.—Can I find a place in your valuable little sheet to announce an illustrated work on the Butterflies of New England, and to ask the aid of Entomologists in its preparation? It will include not only the New England species but all those of the adjacent regions, and, as it is to appear *within a year*, I shall need the assistance of all collectors and working Entomologists in obtaining eggs, larvæ, and pupæ for description, and as material for coloured illustrations. One person may find what will escape another, and the admirable method of obtaining eggs and raising larvæ recounted by Mr. Saunders in your Journal, opens a ready field for recreation and instruction, I am anxious to obtain living specimens in every stage, and will give the amplest credit to all original contributions. All specimens sent may be forwarded to my address below, and should also be marked "Insects" that they may receive immediate attention on their reception. I shall be happy to correspond with any one wishing to help me.—SAMUEL H. SCUDDER, Boston Society of Natural History, Berkeley St., Boston, Mass.

BOOKS RECEIVED.

Revision of the Mole Crickets. By S. H. Scudder. Being the first memoir of the Peabody Academy of Science, Salem, Mass. (Price \$1.25.) An admirable memoir on this curious family of insects by one of the best American authorities on the order to which they belong. The press of the Essex Institute certainly deserves the highest commendation for the remarkably beautiful specimens of typography that it issues; the work before us is a marvel of excellence, both as regards the paper and printing. The large plate with which it is illustrated is also exceedingly well done.

A Guide to the Study of Insects. By A. S. Packard, Jr., M.D. Part vi., March, 1869. (50 cents.) This part completes the account of the Moths, and begins the description of the Diptera. It is illustrated with a handsome new steel plate, figuring the transformations of Moths, and about fifty woodcuts. The author now announces that four more parts will complete the work.

Le Naturaliste Canadien. Nos. 3 and 4, Feb. and March, 1869. Quebec, P. Q. (\$2 per annum).

The Canadian Naturalist and Geologist with the Proceedings of the Natural History Society of Montreal. New series, Vol. iii., Nos. 4, 5, and 6, Jan. to Dec., 1868. (\$3 per vol.)

Proceedings of the Boston Soc. Nat. Hist. Vol. xii., March, 1869.

The American Naturalist. Salem, Mass., Vol. iii., Nos. 1 and 2, March and April, 1869. (\$4 per annum.)

The Weekly N. Y. Sun. New York, March 3, 10, 17, 24, 31, 1869. (\$1.)

The Canada Farmer. Toronto, March, 1869. (\$1 per annum.)

The American Entomologist. St. Louis, Mo., March and April, 1869. (\$1.)

The American Agriculturist. Orange, Judd & Co., 245 Broadway, New York, March and April, 1869. A very handsomely illustrated publication for farmers and gardeners. (\$1.50 per annum.)

The Cynthia Silk-worm. By W. V. Andrews.

An Essay on Entozoa, Observations on the Building Stone of the Ottawa Country, and An Essay on the native compounds and metallurgy of Iron. By Dr. E. Van-Cortlandt, Ottawa, Ont.

History and Condition of the Portland Society of Natural History from 1866 to 1869. We know of no scientific society that has been so singularly unfortunate as that of Portland, Maine; twice its hall and cabinets have been destroyed by fire. In 1854 it lost every species of property that belonged to it by the burning of the Custom House, and in the fearful conflagration of

1866 it lost its commodious building, splendid collections, everything indeed except its library, which was only saved by the exertion of a few of the members and at the peril of their lives. It now appeals for help from Naturalists everywhere, in the shape of books, specimens, and money, for which returns of native specimens will be made as far as practicable. We shall be happy to receive and forward any specimens that our Canadian readers may send us for the purpose.

The Record of American Entomology, 1869. We are glad to learn that a sufficient number of subscriptions has been received to warrant the issue of this annual, the prospectus of which we published in No. 7. As the book will be larger than at first imagined, the price to new subscribers is raised to \$1. Subscriptions to be sent to W. S. West, Peabody Academy of Science, Salem, Mass.

TO CORRESPONDENTS.

SUBSCRIPTIONS RECEIVED.—To Vol. i., from W. V. A., New York; H. S. S., Buffalo; Prof. A. J. C., and Agricult. College Lib., Lansing, Mich., (per G. T. F.); C. S. M., Boston, (per R. P. Studley & Co.); E. B., Boston; 10 subscriptions per *American Naturalist's Book Agency*.

W. V. A., New York.—Notices of specimens *for sale* can only be inserted as advertisements, the rate for which is ten cents per line; ditto *for exchange*, gratis to subscribers. The *Ailanthus* grows very well in this part of Canada.

E. H. C., New York.—Your note of January 28, we chanced to receive at the Toronto P. O. the other day—our address is "Credit, Ont." Specimen numbers sent.

POSTAGE FROM THE UNITED STATES.—We would respectfully remind our correspondents that the postage on letters from the United States to Canada, is *six cents*; a three cent stamp on such letters is merely thrown away, as we are then charged the unpaid rate of ten cents; it is rather aggravating to find thirteen cents paid between us, when six cents are all that are necessary.

EXCHANGE OF LEPIDOPTERA.—I should be glad to get up an exchange of Lepidoptera with some Canadian collector.—W. V. ANDREWS, 130 Charlton Street, New York.

ERRATA.—No. 3, page 18, 4th line from bottom, for *Calliumorpha* read *Callimorpha*.

No. 6, page 48, 4th line from bottom, for *President* read *Press*.

No. 7, page 60, third line from top, for *larval* read *chrysalid*.

No. 7, page 68, fourteenth line, for *Mr. Cresson of Philadelphia* read *Mr. Scudder of Boston*.

The *American Entomologist* (\$1), and the *Canadian Entomologist* (56 cents), will be furnished, post paid, for one dollar and twenty-five cents (\$1.25) per annum.

All communications, remittances and exchanges, should be addressed to

"THE REV. C. J. S. BETHUNE, *Credit, Ont., Canada.*"

The Canadian Entomologist.

VOL. I.

TORONTO, MAY 15, 1869.

No. 10.

NOTES ON CANADIAN LEPIDOPTERA.

PART III.

BY THE EDITOR.

(Continued from page 72.)

In our last notes we mentioned the names of various species of moths that, on various grounds, are to be dropped from our list of Canadian Lepidoptera; we now proceed to mention those that are to be *added* to the list, as having been captured or determined since its publication in 1865. These, of course, are only what have come under our own notice, but we have no doubt that the number might be largely increased by our readers, notwithstanding that the last two years have been so peculiarly unfavorable to the collectors of Lepidoptera in this country.

Acronycta occidentalis, Grote & Rob. (Pro. Ent. Soc. Phil. vi. 16).—Taken at London by Mr. E. B. Reed.

Acronycta funeralis, Grote & Rob. (Pro. Ent. Soc. Phil. vi. 17, pl. 4.)—Taken at Grimsby by Mr. Pettit.

Acronycta morula, Grote & Rob. (Trans. Am. Ent. Soc. ii. 196, pl. 3.) Several specimens taken at sugar, at Cobourg.

Acronycta superans, Guén.—Numerous specimens taken at Cobourg in June, 1865, at sugar. This handsome species may be readily distinguished by its dark primaries, which are conspicuously mottled with white, and have a luteous or orange-coloured spot at the base of the inner margin.

Hydræcia sera, Grote & Rob. (Trans. Am. Ent. Soc. i. 345, pl. 7.)—Taken in Canada by Mr. Bowles, of Quebec.

Caradrina multifera, Walk. (C. B. M. x. 293).—Taken at Cobourg. Mr. Walker mentions its capture in Nova Scotia by Lieut. Redman, and thus describes it:—"Cinereous. Thorax and fore wings with blackish speckles. Fore wings with black marks on the costa, with blackish zig-zag transverse lines, with two brownish bands, and with brown marginal dots; orbicular spot small; reniform large, nearly fusiform. Hind wings with whitish ciliæ. Length of body 5 lines; of wings 12 lines."

Agrotis murænula, Grote & Rob. (Trans. Am. Ent. Soc. i. 352, pl. 7).—Taken at Cobourg. Distinguished by the pearly grey primaries, which are almost destitute of markings; the reniform spot, which forms a blackish blotch, and the dotted transverse posterior line, being alone conspicuous.

Agrotis subgothica, Haworth (*Feltia ducens*. Walk.).—Taken at Orillia, by Mr. Bush.

Graphiphora triangulum, Guén.—An European species, taken in many parts of Canada. The primaries are pale brownish, often with a rosy tinge; the basal transverse line is margined with black on both sides, the anterior on the external side; a dark brown or black spot before the orbicular, which is very distinct and well defined, and another black spot between it and the reniform; the claviform spot, as well as the two others, is well marked; sub-terminal line distinct, whitish, preceded by a blackish spot on the costa. Secondaries greyish-brown, with paler ciliæ. Alar expansion 1.4 to 1.6 inch.

Graphiphora Dahlii, Hübn.—Among a collection made by Mr. D'Urban, in Lower Canada, and sent out from England by him to Mr. Reed of London; the specimens were all determined by Mr. Walker. The species may be briefly described as follows:—Primaries reddish-brown; transverse lines almost obsolete, hoary; median space dark; orbicular spot large, elliptical; reniform conspicuous from its paler margin: secondaries grey-brown. It is recorded as a not uncommon insect in England, and has also been taken in the State of New York.

Xanthia ferruginea, Hübn.—Another European insect, the larva of which is said to feed on the young buds of the poplar. It is not uncommon in Canada in September and October, and even sometimes as late as the end of November. The general colour of the primaries is reddish-ochreous, more or less shaded with grey; transverse lines undulating, distinct; orbicular spot pale, of the ground colour, but distinctly margined; reniform well defined with its lower half dark grey; a narrow transverse median shade, and a terminal shade clearly divided by the pale undulating sub-terminal line. Secondaries paler ochreous, with transverse median and sub-terminal darker lines. Alar expansion 1.4 to 1.6 inch; length of body 0.6 inch.

Xylina Bethunei, Grote & Rob. (Trans. Am. Ent. Soc. i. 354, pl. 7).—"Readily distinguished by its pale color and ochraceous shadings." Named by the authors after the editor of this journal, who has taken the species at Cobourg, Toronto and Credit, in the months of September and October. It has also been taken by Mr. Pettit at Grimsby, and in other localities.

Cucullia convexipennis, Grote & Rob. (Trans. Am. Ent. Soc. ii. 201, pl. 3.)—"Habitat, Atlantic District. Imago flies in July and August. Easily distinguished from the described North American species of the genus by

the convex external margin of the wings, while the primaries above are very distinct in appearance." Their general colour is dull pale ochraceous, deeply shaded on the apical half of the costa, and on the inner margin with dark ferruginous. A specimen of this insect has been sent us by Mr. J. M. Jones, President of the Nova Scotian Institute of Natural Science, Halifax, N. S.

Anarta luteola, Grote & Rob. (Pro. Ent. Soc. Phil. iv. 493, pl. 3).—Taken by Mr. W. Couper in the vicinity of Quebec. Primaries black, with the reniform spot very conspicuous, white; secondaries clear yellow, with a broad neatly defined black border of uniform width. Alar expanse 1.00 inch, length of body .50 inch.

Anarta Acadiensis, Bethune.—A full description of this new species will appear in the forthcoming number of the Transactions of the Nova Scotian Institute of Natural Science; we shall take an opportunity of transferring it to the pages of this Journal at some future time. The species was determined from a specimen sent us by Mr. J. M. Jones.

Phesia mappa, Grote & Rob. (Trans. Am. Ent. Soc. ii. 204).—This very beautiful species is described from a specimen taken by Mr. Bowles at Quebec. We have received a specimen from Mr. J. M. Jones, of Halifax, N. S., and have seen others that were taken in this Province. Its general colour is purple rosy, with shades of very deep brown and black, and numerous golden dots and markings.

Anomis grandipuncta, Guén.—Determined for us by Mr. Walker. Taken in great numbers at Cobourg in September, 1865, and not uncommon in various parts of Ontario. In the British Museum Catalogue (Lep. Heteroc. xiii. 989) the specimens are stated to be from South America and the West Indies. The primaries are pale fawn-colour tinged with roseate, with a few scattered reddish streaks representing the transverse lines, and a large blackish-white speckled discal spot in the place of the reniform; secondaries dark greyish cinereous. Alar expansion 1.50 inch; length of body 0.50 inch.

Nænia typica, Linn.—A common European insect, also taken in the United States, sent to Mr. Reed in Mr. D'Urban's collection made in Lower Canada. The following is Mr. Stainton's description (Manual, i. 312): "Fore-wings brown, marbled with dark brown; the lines paler; the veins and margins of the stigmata whitish ochreous: hind-wings dark grey. In June. Larva greenish grey, with a faint rosy tint in the incisions; a row of oblique whitish streaks intersect the dark grey sub-dorsal line, and those on the 11th or 12th segments are followed by a black streak; spiracular line whitish, edged above with blackish (*Duponchel*). On dock, willow-herb, &c. When young the larva is quite gregarious, and almost defoliates the plant on which it occurs."

Syneda Hudsonica, Grote & Rob. (Pro. Ent. Soc. Phil. iv. 494, pl. 3).—

We took a specimen of a lovely moth at Credit last year, which we consider to be this species. It chiefly differs from G. & R.'s description and figures in the much greater width of the black markings on the secondaries, thus leaving much less of the extremely pale yellow ground colour. We do not attempt a brief description, as it would necessarily be quite inadequate; we must therefore refer our readers to the full account by the authors.

Parthenos nubilis, Hübn.—This handsome species of the family *Catocalidæ* may be readily distinguished by its beautifully mottled black and white primaries and luteous secondaries, the latter especially being remarkable for having *three* undulating black transverse bands, and a marginal series of confluent, round black spots. We took several specimens at Credit in June, 1868, mostly attracted by light.

Erebus odora, Linn.—Two specimens of this gigantic moth have been taken in Canada; one by Dr. Sangster at Toronto, the other by Mr. B. Billings at Ottawa. In the British Museum Catalogue specimens are related to have been captured on the "West Coast of America," "off the Coast of Brazil, 120 miles due East of Espirito Santo," Brazil, West Indies. It has also been taken in the United States. The wings expand about five inches and are deep blackish, with numerous transverse black lines, and on the primaries a large incised discal spot.

Remigia latipes, Guén.—Taken at Cobourg, and also by Mr. Pettit at Grimsby. Distinguished by its extraordinary posterior tarsi, which are densely fringed with excessively long hairs. The primaries are cinereous, thickly sprinkled with blackish scales; the two interior transverse lines are distinct, almost straight, oblique and converging; discal spots tolerably distinct, finely margined with black; subterminal space much darker, sharply defined anteriorly by the posterior transverse line; submarginal line indicated by a row of blackish spots. Secondaries dark cinereous, with a transverse line of blackish spots, and a broad blackish border. Alar expansion 1.75 inch; length of body 0.7 inch. This species was determined for us by Mr. Walker.

The following species, of other families than the *Noctuidæ*, are also to be added to our Canadian Lists:—

Drymonia? confusa, Walk. (Cat. Brit. Mus. xxxii. 413). Taken at Orillia by Mr. Bush.

Dasychira clandestina, Walk. (Can. Nat. & Geol. vi. 36., Feb. 1861) Taken by Mr. D'Urban at Bevin's Lake, Montcalm, P. Q., July 7th 1859. A specimen of this insect is in the collection before alluded to, sent by Mr. D'Urban to Mr. Reed.

Anisopteryx vernata, Peck. (Harris' Ins. Mass. p. 461): This destructive insect, well-known under the name of "Canker-worm," is related in

the *Canada Farmer*, for May 1 1867, to have been taken at Grimsby in the previous November by Mr. Pettit.

Larentia geminata, Grote & Rob. (Pro. Ent. Soc. Phil. vi. 29, pl 3). "Readily distinguished by its pale coloration, its conspicuous irregular black bands associated with faint yellowish coincident shades." Taken by Mr. Pettit at Grimsby, also found in other localities.

Carpocapsa pomonella, Linn.—Strange as it may appear, this terrible pest of fruit growers, the Apple Codling Moth, which destroyed probably one-half of the apple crop last year in Canada, has not had its name entered upon our List of Native species; we only wish it were an entire foreigner. A good account, with figures, of the insect is given in our friend Mr. Riley's First Report, p. 62.

Pempelia grossulariæ, Packard. (*Guide*, Part vi. p 331, fig. 254). This new Gooseberry worm, first discovered by our esteemed coadjutor, Mr. Saunders of London, Ont., must now be added to our List. An excellent account of it in all its stages is given in Mr. Riley's Report, p. 140.

Anchylopera fragaria, Walsh & Riley. (Amer. Entom. i, 89, fig. 75, Jan. 1869). "The Strawberry Leaf-roller"—another new destructive insect which, *vide Canada Farmer* (Feb. 1869), is also to be added to our List.

Now that we have completed our task, and brought our List of Canadian Lepidoptera—with many omissions no doubt, but to the best of our ability—down to the present time, we trust that our readers will assist us in recording in the pages of the CANADIAN ENTOMOLOGIST, any new additions that may be made from time to time to our knowledge of the Lepidoptera of this country.

MISCELLANEOUS NOTES.

ALDER-BUD GALL.—The gall on *Alnus*, mentioned on p. 81 of your last number, is probably the one described by me on p. 198 of vol. i. of the Monographs on N. A. Diptera, under the name of *Cecidomyia serrulutæ*. I obtained at that time the perfect insect.—R. OSTEN SACKEN, New York, April 22, 1869.

A CURCULIO NEW TO CANADA.—In the *Canada Farmer* for March, 1869, page 98, mention is made of the capture, in July, 1868, of a specimen of *Lixus concavus*, Say, by Mr. J. M. Bristol, of Virgil, County of Lincoln, Ont. A pair of specimens of this insect were sent us last year by Mr. James Angus, of West Farms, N.Y., but it was not known before to occur in Canada. The following is Mr. Say's description (Ent. Works, vol. ii., p. 275):—

"*L. Concavus*.—Base of the thorax and of the clytra with a common dilated indentation. Inhabits Indiana.

"Thorax convex each side, much contracted before, with very small punctures; dorsal indentation obsolete near the anterior margin and in the middle, profound at base: elytra with regular punctured striæ, not rugose; base with a dilated common deep indentation equalling that of the thorax, and another smaller indentation on the middle of the base: thighs unarmed. Length over half an inch.

"Common, and is the largest species that I have met with in this country. The hair of the body retains a yellowish ferruginous dust, which often gives the whole insect that color."

EXCHANGES.

LEPIDOPTERA.—Of Northern United States in exchange for those of the Southern United States, Canada, East Indies, and South America. Correspondence also solicited. W. WEBSTER BUTTERFIELD, M.D., P. O. Box 111, Indianapolis, Indiana, U. S.

LEPIDOPTERA.—Of Pennsylvania, in exchange for those of Canada.—F. M. YEAGER, Reading, Pa., U. S.

LEPIDOPTERA.—I am very anxious to secure a correspondent in Canada who would give me in exchange Lepidoptera (Rhopel. et Heteroc.) from Canada, Labrador, and British America generally, for some from Penn., Virginia, Georgia, Florida, California, Europe, S. America, etc.—HERMAN STRECKER, Box 111, Reading, Berks Co., Penn., U. S.

EUROPEAN DIPTERA.—A large collection has been entrusted to me, which will be exchanged for American Diptera, Orthoptera, Hymenoptera, Coleoptera, and Lepidoptera; preference given to the orders in the sequence named.—Rev. C. J. S. BETHUNE, Credit, Ont.

EPIHEMERIDÆ.—An English Entomologist studying this tribe thoroughly, earnestly desires American specimens, for which other English insects will be given.—Address EDITOR CAN. ENTOMOLOGIST, Credit, Ont.

HYMENOPTERA.—Now that the collecting season has begun again, we beg to remind our readers that Mr. E. T. Cresson, of Philadelphia, is desirous of obtaining specimens of Canadian Hymenoptera. He will gladly determine specimens for any one who will send a duplicate set, numbered to correspond with their cabinet specimens, to the care of JOHNSON PETTIT, Esq., Grimsby, Ont.

BOOKS RECEIVED.

First Annual Report on the Noxious, Beneficial, and other Insects of the State of Missouri. By Charles V. Riley, State Entomologist. Jefferson City, Mo., 1869. (Price \$1, plain plates; \$2 colored.)

We gladly notice the receipt of this excellent Report, which is of interest and value not only to farmers and gardeners, for whose especial benefit it is prepared,

but also to all who study the ways and doings of insects. We may particularly call attention to the chapter on Cut-worms, in which is related the natural history of twelve species, some of them new to science; the account of new Grape insects, and various other species, described now for the first time. The work is illustrated by nearly 100 wood-cuts, and two full-page plates; and bears testimony throughout to the faithful and painstaking labours of the author, both in the field and in the study. The Legislature of the State of Missouri deserves much credit for its enlightenment in thus fostering the study of practical entomology; we earnestly trust that our Canadian Government will speedily see the benefit of following so good an example.

Report on the Culture of the Japanese Silk-worm, Bombyx Yama-maï, in 1867-68, in England. By Alexander Wallace, M.D., Colchester, 1869. This pamphlet (for which we have to thank Mr. W. V. Andrews, the author's New York agent,) contains a very full and minute account of Dr. Wallace's experiments in the cultivation of this noted Japanese silk-worm. If patience and perseverance can ensure success, Dr. W.'s efforts ought certainly to be rewarded by freedom from failure; such, however, we gather from his Report, has not yet been the case, though he has attained some success, and has raised a few genuine specimens. Any one interested in the culture of these creatures, or other species of Bombyces, will find very many useful details as to management, food, etc., in this work.

Hardwicke's Science-Gossip: A Monthly Medium of Interchange and Gossip for Students and Lovers of Nature. January to May, 1869. London: R. Hardwicke, 192 Piccadilly. (4s. per annum.) An excellent and entertaining periodical, handsomely illustrated; it is largely occupied with microscopy, but entomology and other branches of natural science receive a due share of attention.

Le Naturaliste Canadien. Quebec, No. 5, April, 1869.

Proceedings of the Boston Soc. Nat. Hist. Vol. xii., April, 1869, pp. 305-400.

The American Naturalist. Salem, Mass., vol. iii., May, 1869.

The American Entomologist. St. Louis, Mo., May, 1869.

The American Agriculturist. New York, May, 1869.

The Canada Farmer. Toronto, April, 1869.

The Maine Farmer. Augusta, Me., March 20, 27, April 3, 10, 17, 24.

The Weekly N. Y. Sun. New York, April 7, 14, 21, 28.

Bulletin of the Museum of Comparative Zoology. Cambridge, Mass., Nos. 1 to 7, 1863-69.

The Butterflies of North America; with Colored Drawings and Descriptions. By Wm. H. Edwards. Philadelphia: The American Entomological Society, Part 3, December, 1868.

After a long delay,—caused, we regret to learn, by the illness and subsequent death of the artist at first engaged upon the plates,—another part of this truly magnificent work has been issued. It contains very beautiful and accurate figures of the following species: *Argynnis Monticola*, Behr, taken in California; *A. Halcyone*, Edwards, from Colorado; *Limenitis Proserpina*, Edw., taken in the Catskill Mountains; *Lycena violacea*, Edw., from Virginia, Philadelphia, and Lon-

don, Ont.; *L. Lygdamas*, Doubleday, found in Michigan, Ohio, Virginia, and through the Southern States; *Thecla teta*, Edw., first taken by Mr. Saunders, at London, Ont., afterwards in Maine, and Western Virginia; *T. Acadia*, Edw., taken in Canada near London, Ont., and in various parts of New England and New York. The promised synopsis of North American species is begun in this part. The price to new subscribers is now raised to \$2.50 (U. S.) per part, in consequence of the increased expense of the drawings on stone, and coloring of the plates.

TO CORRESPONDENTS.

SUBSCRIPTIONS RECEIVED:—To Vol. i., from H. S., F. M. Y., Reading, Pa. To end of Vol. ii., from the Soc. Nat. Sci., Reading, Pa.

H. T. S., Lewisham, Eng.—Have sent Nos. 1 and 2, as requested.

F. W., Wanstead, Eng.—C. B. M., Part v. received; many thanks. Have sent you the numbers so far issued of the *American Entomologist*.

J. M. J., Halifax, N. S.—Thanks for the two papers, just received.

SHEET CORK.—We have still some sheet cork on hand; ordinary thickness, 16 cents per square foot; extra thick, 24 cents.

ENTOMOLOGICAL PINS.—We have ordered 100,000 pins, the same quality as our last supply, which gave so much satisfaction, from W. Klaeger, the celebrated German manufacturer; all sizes from No. 1 to No. 6. We expect their arrival next month, and shall be glad to receive early orders from our readers.

THE CANADIAN ENTOMOLOGIST is published on the 15th of each month by the Entomological Society of Canada. In consequence of the new Postal Law, which requires pre-payment of all Periodicals after January 1, 1869, we are constrained to make a slight change in the rates of subscription, as follows:—

To members of the Society, gratis.

To non-members (in Canada) 56 cents per vol., post-paid; two copies to one address \$1.

To subscribers in the United States, 62 cents per volume, free of Canada postage. The ordinary U. S. fractional currency may be sent.

To subscribers in Great Britain. Three Shillings per volume, post-paid. The amount may be sent in stamps.

Extra copies 5 cents each, 50 cents per dozen.

N.B.—Correspondence is invited respecting the habits, localities, occurrence, &c., of insects, as this journal is intended to be a medium for the recording of observations made in all parts of the country; insects for identification will be gladly attended to and returned when desired. Any contributions to the publication fund will be thankfully received and gratefully acknowledged.

The *American Entomologist* (\$1), and the *Canadian Entomologist* (56 cents), will be furnished, post paid, for one dollar and twenty-five cents (\$1.25) per annum.

All communications, remittances and exchanges, should be addressed to

“THE REV. C. J. S. BETHUNE, *Credit, Ont., Canada.*”

The Canadian Entomologist.

VOL. I.

TORONTO, JUNE 15, 1869.

No. 11.

ENTOMOLOGICAL NOTES.

PAPER NO. VI.

BY W. SAUNDERS, LONDON, ONT.

Pyrameis cardui.—Larva found feeding on thistle, June 15th, full grown. Length $1\frac{1}{4}$ to $1\frac{3}{8}$ inches.

Head black, reddish in some specimens, above sprinkled with fine whitish hairs, and a few small black tubercles.

Body above greyish-brown, variegated with yellow and black. Second, third, fourth, fifth, and terminal segments, black, with many whitish dots. A broken dorsal stripe, white anteriorly; yellow from fifth to terminal segments: second segment without spines but covered with fine whitish hairs; third and fourth segments have four spines each; the others have seven, excepting the terminal ones, which have two pairs, one placed behind the other. The spines are much branched and vary in color from yellowish to brownish-white tipped with black; base of spines along sides of body from fifth to twelfth segments of a reddish-orange color. Body thickly sprinkled with fine whitish hairs arising from minute white or yellow dots; a pale yellowish broken stripe on each side close to under surface. Spiracles black, ringed with dull yellow.

Under surface greenish-grey, excepting on second, third, and fourth segments where it is dull black. Fifth, sixth, eleventh, and twelfth segments with tufts of whitish hairs springing from elevated tubercles. Feet dark brown, slightly hairy; prolegs yellowish grey.

The larvæ of *Cardui* vary very much—one young specimen was entirely black, excepting the dorsal and lateral yellow lines; another, full grown, was black throughout marked with yellow dots and transverse lines between the rows of spines—others with very little black, the yellow predominating, but these have some black about the anterior segments. The ridge of tubercles in which the spines are set is bluish-grey in the more yellow-specimens, and the same color intermixed with black in the darker ones. Some of the lighter specimens have the base of nearly all the spines reddish, or reddish-orange; others have this color only on segments from fifth to terminal; one

rather dark specimen had all the spines reddish orange at base, giving the whole body a reddish hue.

These larvæ remained in the chrysalis state eight or nine days. The imago is usually found common throughout July and August, and the larvæ plentiful in September. It is quite likely that this insect may also pass the winter in the imago state, although I have never found it hybernating, or taken it on the wing very early in the season.

Limenitis disippus, Godt.—Larva found feeding on willow, July 24th.

Length one inch and a quarter. Head rather large, flattened in front, strongly bilobed, pale green with two dull white lines down the front and roughened with a number of small green and greenish-white tubercles. Each lobe is tipped with a green tubercle, or short horn, larger than any of the others on head. Mandibles brown, tipped with black.

Body above dark rich green, with patches and streaks of dull white; second segment smaller than head, with many minute whitish tubercles; third segment dull whitish-green, raised considerably above second, with a flat ridge above having a long brownish horn on each side of it, thickly covered with very short white and brown spines; fourth segment about the same size as third, with the same kind of ridge above, with a small tubercle on each side capped with a bunch of short whitish spines; between the ridges on third and fourth segments are two small black dots above. Each segment from fifth to thirteenth inclusive has two tubercles, one on each side, and in a line with the long horns on third segment, each crowned with a cluster of whitish spines; tubercles on sixth and twelfth segments much larger than the others, those on eleventh and terminal segments next in size, the latter placed on the anal lid and nearer together than those on the other segments,—those on the ninth are smallest. Tubercles on seventh, eighth, tenth, and eleventh segments with a streak of white at their base; each segment behind fourth, excepting ninth, has several smaller tubercles of a bright blue color. A large whitish patch covers nearly the whole of ninth and parts of eighth and tenth segments, and another of a similar character covers the second, third, and part of the fourth. A white stripe extends along each side close to under surface from fifth to terminal segments inclusive, in which is set a small cluster of whitish spines about the middle of segments from sixth to tenth. On each side of seventh, eighth and tenth segments is an elongated blackish spot, just above and behind spiracles; terminal segment with two dark greenish-brown spots above, anterior to the tubercles. Spiracles rather large, oval, brownish-black.

Under surface whitish-green, with a central dull-white stripe on hinder segments; feet brown, ringed with brownish black; prolegs pale greenish, faintly tipped with brown.

This larva varies somewhat in color, some specimens being of a paler green than that above described. There are two broods of this insect in the season, the larvæ resulting from the eggs deposited by the second brood usually attain to less than half their growth before winter, when they hibernate, completing their growth the following spring.

Limenitis arthemis, Drury.—About the middle of July, 1868, while beating some thorn bushes over an umbrella I captured a larva closely resembling *Disippus*, in fact I thought at first it was merely a variety of that larva. Upon further examination I suspected it to be distinct, and resolved to describe it, but before an opportunity occurred of doing so it disappointed me by changing to a chrysalis, which in ten or twelve days after produced a beautiful specimen of *Arthemis*.

Thecla acadica, Edwds.—Larva found feeding on willow, from 10th to 20th of June.

Length five-eighths of an inch; onisciform. Head very small, pale brown and shining, drawn within the second segment when at rest.

Body above green, of a moderately dark shade, thickly covered with very short whitish hairs scarcely visible to the unaided eye. Body thickest from third to tenth segments. Dorsal line of a darker shade of green than the rest of body. Dorsal region flat, rather wide, and edged on each side with a raised whitish yellow line, beginning at the third segment, and growing fainter on the twelfth and thirteenth. Sides of body inclined at an almost acute angle and striped with faint oblique lines of greenish-yellow. A whitish-yellow line borders the under surface, beginning at the anterior edge of second segment, and extending entirely around the body to a point opposite the place of beginning. This line is raised in the same manner as that bordering the dorsal ridge. Twelfth and thirteenth segments much flattened, especially the latter.

Under surface similar to upper, and also covered with very short fine hairs, —feet and prolegs partake of the general color.

In a younger specimen the head was almost black, with a streak of white across the mandibles. The under side was rather deeper in color than the upper, with a faint bluish tint.

Chrysalis 0.32 in. long; greatest width 0.15 in., covered with minute hairs, pale brown, with many dots and patches of a darker shade. A dark ventral stripe from seventh to terminal segments, sides of body with four or five short dark lines. The insect remains in the chrysalis state about eight or nine days.

Thecla —?—Larva found feeding on pine, June 27th, 1865, one specimen full grown, another about one-third grown, probably the larva of *Thecla niphon*, Boisd. & Lec.

Length five-eighths of an inch. Head very small, pale brownish-white and shining, drawn within the second segment when at rest.

Body above green, of rather a dark shade, but with a tinge of yellow; a prominent dorsal crest or ridge from third to tenth segments inclusive, bordered on each side by a bright whitish-yellow line, spaces between segments somewhat depressed. From the line bordering the crest the sides of body incline abruptly downwards to the spiracles where the color is a little paler. Below this the body is somewhat flattened out and bordered on each side from third segment backwards with a bright whitish yellow line. Second segment rather paler than the rest of body with a somewhat polished surface and without markings. The two hinder segments of body are much flattened.

Under surface slightly paler, feet whitish, shining, and semi-transparent; prolegs green tipped with whitish.

The smaller specimen differed from the larger only in being paler and duller in color, and having the yellow lines less distinct.

The larger specimen entered the chrysalis state July 3rd, the other somewhat later, but both failed to produce the imago, and finally dried up so much that I was unable to determine with certainty to what species they belonged.

Thecla mopsus, Boisd. & Lec.—On the 18th of May, 1868, while beating some wild cherry bushes on the Port Stanley Railroad track, a short distance from London, I obtained a small *Thecla* larva which very much interested me. Its length was one-eighth of an inch, Head small, brownish black, drawn within the second segment when at rest. Body above dull rosy red, of a brighter tint along sides, with the edges of the dorsal crest paler. Body sparingly covered with rather long hairs nearly one-sixth of an inch long, most of them curved backwards.

Underside dull yellowish, feet and prolegs of the same color.

On the 26th May it escaped from the box in which I thought it was carefully secured, and I saw it no more. On the 9th of June I visited the same locality and secured a larger specimen. I was uncertain this time as to whether I got it from thorn or cherry, as in the bush I was beating they were both growing close together, most probably it was from the cherry.

Length 0.40 in. Head small, of a shining black color, with a pale stripe across the front just above mandibles; mandibles black; head drawn within the second segment when at rest.

Body above green along the middle segments, deep rose color at each extremity, thickly covered with short brown hairs; second segment rosy above, greenish yellow at sides with an edging of the same color in front; third segment entirely rose colored; from third to tenth segments is a dorsal stripe of rose which is wide on fourth, fifth, eighth, and ninth segments,

narrow, almost linear on the intermediate ones; on the tenth segment the green encroaches on the rose color on sides of body, extending more than half way into the segment; behind the tenth segment the body is rose color with a dorsal streak of a darker shade; the rose color at each extremity is united by a rosy line along each side close to under surface.

Under surface dull green with a yellowish tint; feet and prolegs yellowish-green.

June 24th. The larva was now about full grown. Length 0.70 in, width about 0.20 in.

Head very small, bilobed, black and shining, with a streak of dull white across the front above mandibles; mandibles reddish-brown.

Body above dull green, with a yellowish tint especially on anterior segments, thickly covered with very short brown hairs, scarcely visible without a magnifier,—these hairs arise from small pale yellowish dots which appear slightly raised. A dorsal streak of dark green arising from the internal organs showing through the semi-transparent skin from second to fourth segments inclusive. A patch of dull pink or rose color on anterior segments, faint on second segment, covering but a small portion of its upper surface; nearly covering the dorsal crest on third, and reduced again to a small faint patch on fourth; on posterior segments is a much larger rosy patch, extending from the hinder part of ninth segment to the end of body,—the hinder part of ninth segment is merely tinged, on tenth it is enlarged to a considerable sized patch widening posteriorly, and behind this the body is entirely covered with rosy-red. The sides of tenth segment close to under surface have a streak of the same color, and there is a faint continuation of this on ninth segment. Second segment smaller than third. A wide dorsal crest or ridge from third to tenth segments inclusive, behind this the body is suddenly flattened, sides of body acutely sloped from dorsal ridge to under surface.

Under surface yellowish green, with a few very fine brownish hairs; feet and prolegs greenish, semi-transparent.

I found that the larva fed readily on plum leaves, indeed seemed to prefer them to cherry, so I reared it on this.

June 29th.—The larva fastened itself to the lid of the box in which it had been fed, changing to a chrysalis July 1st.

Chrysalis described July 3rd. Length 0.45 in., greatest width 0.20 in.

Body pale brown and glossy, with many small dark brown or blackish dots distributed over the whole surface, thicker along the middle above, appearing as a faint imperfect ventral stripe from seventh to eleventh segments; surface thickly covered with very short brown hairs, invisible without a magnifier.

The imago was produced on the 13th of July, a fine ♀ *Mopsus*.

I was much surprised when this specimen proved to be *Mopsus*. Boisdu-

val figures the larva of *Mopsus* green, with four white spots above about third or fourth segment, and some white at sides of terminal segments, all very striking in the figure. He also gives *Eupatorium* as its food plant. My specimen was entirely different from this, either Boisduval's figure is incorrect or the *Mopsus* of the south is distinct in its larval state from that of the north.

Thecla ——? (probably *calanus*, Hüb.).—Larva found feeding on oak from 6th to 22nd June.

Length 0.60 in. Head small, rather flat, bilobed, of a shining brownish-black color with a pale streak down the middle, and a line of white across mandibles above; mandibles black; head drawn within the second segment when at rest.

Body above dull greenish-brown with a slight reddish tint, thickly dotted with minute black points invisible to the naked eye, from some of which arise short black or brownish hairs, most numerous about the extremities and around the edge of body close to under surface. Dorsal region flattened above, with a slightly raised line on each side of a paler reddish-brown, edged without from fifth to ninth segments with greenish-grey; a dorsal band of darker brown, enlarging to an indistinct patch at each extremity, most prominent on hinder segments, and having a series of spots along its centre from fifth to ninth segments inclusive of dull greenish grey, the hinder ones being almost diamond shaped; spaces between segments slightly paler. The sides of body incline abruptly, and are striped with faint oblique lines of dull greenish-grey. Second segment dull greenish, with many short brown hairs. Close to under surface the larva assumes a reddish brown tint, bordered without by a raised line of dull yellowish or greenish white, extending from the anterior portion of third segment all around the hinder part of body to a corresponding place on the opposite side.

Under surface pale dull green, with a slight bluish tint, and a few short hairs along each side; feet pale brown and shining; prolegs greenish, semi-transparent, faintly tipped with brown.

June 27.—Larva fastened itself up to lid of box in which it was confined, and completed its change on the 29th.

July 3.—Chrysalis. Length 0.40 in., greatest width 0.15 in.

Body dull yellowish brown, slightly glossy, with many streaks and dots of a darker shade of brown; a dull ventral stripe formed of these spots extends from eighth to eleventh segments inclusive; a short streak of dark brown down the middle of anterior segments; body thickly covered with very fine short brownish hairs, invisible without a magnifier.

More than two years ago I became firmly convinced that the species now known as *T. calanus* was distinct from *falacer* as figured by Boisduval, with which it had hitherto been confounded; and communicated my views on this

point several times to W. R. Edwards, Esq., and proposed for the species the name *Edwardsii*. A description in manuscript was prepared and read before the London branch of the Entom. Society of Canada. Being persuaded that the larva above described belonged to this insect, I delayed publishing it in hopes of rearing the larva so as to give its complete history. I have taken specimens of the larva for the last three seasons, but have failed each time in bringing them to perfection. One year I had a very fine specimen, which entered the chrysalis state, but while still fresh another larva ate a hole in its side. A second season all my specimens became diseased and dried up, although great care was taken of them. Last year I succeeded in bringing two into the pupa state, and thought, now surely the problem will be solved, but no! Days and weeks passed away and the imago failed to appear. Thinking it possible that some specimens might be delayed in their development a season they were kept over until a few days since, when I concluded to carefully dissect one to see if the species could be made out. On lifting a small piece of the enclosing shell a number of minute living ichneumons escaped from the orifice. On examination the second specimen was found similarly infested. I hope to succeed better during the present season.

Of late Mr. Grote has determined beyond doubt that the *falacer* of Boisduval's plate is distinct from that of his text, or that the text is mainly founded on a species distinct from the plate, the *Thecla calanus* of Westwood, which is identical with the insect for which I had proposed the name of *Edwardsii*. Canadian collectors for whom I have named specimens will please bear in mind that the name *falacer* must be dropped and *inorata*, G. & R., substituted for it, and *Edwardsii* changed into *calanus*, West.

Thecla strigosa, Harris.—Larva found feeding on thorn (*crataegus*), June 13th, 1866. Length 0.55 in., onisciform.

Head small, greenish, with a faint tint of brown, glossy, with a black stripe across the front below the middle, and a patch of white between this stripe and the mandibles; mandibles brownish-black.

Body above rich velvety green, with a yellowish tinge, slightly paler between the segments. A dorsal stripe of a darker shade, centered along the middle segments with a faint yellowish line. Anterior edge of second segment yellowish-brown, with a few dots of a darker shade. Body thickly covered with minute brown hairs scarcely visible to the unaided eye. Dorsal crest not bordered with yellow as in *acadica*; sides of body abruptly inclined and striped with faint oblique lines of yellowish, two or three on each segment. The two last segments have a patch of yellowish on each side, making the dark dorsal line appear more prominent. A faint yellowish line close to under surface, from fifth to terminal segments; spiracles pale red, not prominent.

Under surface bluish green, with a darker patch on last two segments; feet whitish, semi-transparent; prolegs bluish-green.

The change to chrysalis took place June 19th. Length of chrysalis 0.35 in.; widest on anterior portion of seventh segment. Head case rounded. Body dark reddish-brown with black markings, thickly covered with fine short whitish hairs, most numerous on anterior and posterior segments; anterior segments with many thickly set patches of blackish; a dark ventral line from sixth to twelfth segments.

This larva very closely resembles that of *Acadica*.

Lycæna neglecta, Edwds.—Larva found feeding on Dogwood (*Cornus*—?) July 12th. Fed it afterwards on willow, which it readily ate.

Length 0.45 in., somewhat onisciform, distinctly annulated. Head small, dark shining brown, with a black streak down the middle, widening as it approaches the mandibles; mandibles brown, with a streak of a paler color above across them; head drawn within the second segment when at rest.

Body above dull greenish-white with a faint tinge of yellow; second segment has a deeper shade of green, with a blackish line across its posterior edge where it joins the third segment; a dorsal line of a slightly darker brownish shade; a dull green band across anterior portion of fifth segment, and another in the same position on eleventh; on each side of each segment, from fifth to eleventh, is a spot of the same hue extending obliquely back-ward. Dorsal crest of a whiter shade than the other portions of body; sides of body slope abruptly, widening considerably at the base. Entire upper surface covered with minute dots from which arise very short fine hairs, invisible without a magnifier, but giving the surface a downy appearance. Twelfth and thirteenth segments much flattened.

Under surface similar in color to upper, with the same downy look; feet faintly brown; prolegs partake of the general color.

A very young specimen was decidedly yellow, with the darker markings scarcely apparent. A second pale green, with scarcely any markings. A third about the same size of a much deeper green, strongly marked with dark green as in the full grown specimens, but more distinct.

The chrysalis I failed to note, also the duration of the pupa stage.

Hesperia —. Larva, probably *Thanaos*, found feeding on hazel, July 31.

Head large, dull red, slightly bilobed, each lobe pointed above and tipped with reddish-orange; a spot of the same hue just above mandibles, and another midway between these, forming a row of three on the outer edge of each side of the head.

Body above dull whitish-green, covered with minute dots of a whitish or greyish-white color; a lateral stripe of pale yellow or whitish yellow, becoming linear on anterior segments and terminating on the anterior edge of third

segment; anterior edge of second segment, immediately behind the head, ringed with black. Body thickest in the middle, much smaller at second and third segments.

Under surface slightly darker than upper; feet and prolegs of the same hue. This larva I failed to rear.

Several years since I found on the wild columbine (*Aquilegia Canadensis*) a somewhat similar larva belonging to a distinct but allied species. I found several of them on the same plant. They had drawn the leaves together and fastened them with silken threads, forming a rude case, in which they secreted when not feeding. An unfortunate accident destroyed them after they had changed to pupæ, along with the description I had made of them, and I have not met with a similar specimen since,—possibly they may have been the larvæ of *Persius*.

NOTE BY ED. CAN. ENT.—For various reasons—especially that Mr. Saunders' observations on the larvæ of Butterflies might be in the hands of entomologists as early in the season as possible—we have devoted the whole of this number to the conclusion of his valuable Notes, and have been consequently obliged to defer other matter till next month.

THE BUTTERFLIES OF NEW ENGLAND.

The notice in our last number of Mr. Scudder's promised work on New England Butterflies, has already brought many welcome responses. A number of living butterflies have been sent in cotton wool, and although a day upon their journey, were received alive and in good condition: those who live near Boston might try this method, but we think that most persons would be interested in raising the larvæ themselves. In attempting to obtain eggs for this purpose, it is better not to select the freshest butterflies, as their eggs will often prove undeveloped, or at least unimpregnated. It should also be remembered that the males usually appear about a week before the females, and experiments would therefore be more likely to succeed if made about a fortnight after the species is first observed.

In answer to repeated enquiries, we will state that the males of butterflies may, in general, be distinguished from the females by a series of clasping hooks which protrude from the orifice at the tip of the abdomen: frequently these are effectually concealed by long scales. In a number of families the sexes can be determined by the partially undeveloped condition of the front legs of the male: collectors also know many species by their colors.

The proposed volume will include a history and description of the parasites of butterflies. Dr. Packard has kindly promised his assistance in describing these parasites, and examples of every kind, and in large numbers, are desired. They should be accompanied by specimens of the species infested, and, if

possible, by such as show the mode of attack: the fullest observations on the time and manner of attack, and on the subsequent life of the insects, will be acceptable. All specimens will be returned, when desired, by the end of the year.

Complete lists of the butterflies found in different localities, both in New England and the adjacent regions, are wanted, and especially if accompanied by careful memoranda of the exact times of the first appearance, and of the duration of each species. It will be necessary to receive insects from every possible quarter, to arrive at a definite knowledge of their habits. To secure this more effectually, Mr. Scudder will name any local collection of butterflies sent to him with notes, at the Boston Society of Natural History, about the first of October: such collections would be returned before the 1st January. For the safety, however, of his own collection, and of others entrusted to him, it will be necessary to return at once, unnamed, any collection showing traces of having been previously attacked by museum pests.

As stated last month, the amplest credit will be given in the work for every item of scientific intelligence received. We urge our readers to assist in this undertaking to the extent of their ability. With such material aid, the volume cannot fail to supply a need which has long been felt.—*American Naturalist*.

LARVA OF MELITEA PHAETON.—Mr. W. H. Edwards, of Coalburgh, West Va., writes us that he has obtained the larvæ of *M. phaeton*, feeding, May 20, on the leaves of *Chelone glabra*, L., (the plant was determined by Mr. B. Billings, of Ottawa, Ont.)

BOOKS RECEIVED.

The Coleoptera of the Island of Montreal. By A. S. Ritchie. (Reprinted from the "Canadian Naturalist and Geologist.")

After some preliminary remarks on classification, and on the habits of the leading families of Coleoptera, the author gives a valuable synonymical list of the species of this order taken on the Island of Montreal. It comprises 27 families, 133 genera, and 217 species, and is a useful contribution to our knowledge of the distribution of species in this country. We observe a few species not on our list, while many of those common in the Upper Province are conspicuous by their absence.

List of Hymenopterous and Lepidopterous Insects collected by the Smithsonian Expedition to South America, under Prof. J. Orton. By A. S. Packard, jun., Salem, Mass.

Le Naturaliste Canadien. Quebec. No. 6. May, 1869.

Proceedings of Boston Soc. Nat. Hist. Vol. xii., pp. 401-419, completing the volume.

The American Naturalist. Salem, Mass. Vol. iii. June, 1869.

The American Entomologist. St. Louis, Mo. June, 1869.

The American Agriculturist. New York. June, 1869.

The Canada Farmer. Toronto. May, 1869.

The Weekly N. Y. Sun. New York. May 5, 12, 19, 26; June 2, 9, 1869.

A Guide to the Study of Insects. By A. S. Packard, jun. Part vii. April, 1869.

This part concludes the Diptera and begins the Coleoptera.

The Canadian Entomologist.

VOL. I.

TORONTO, JULY 15, 1869.

No. 12.

OUR NEW VOLUME.

Very nearly a year has now gone by since the CANADIAN ENTOMOLOGIST was ushered into existence, and it has at length safely arrived at the close of its first volume. Of infantile dimensions, it has crawled along through the months of babyhood, at times putting forth a little more strength and marks of growth, until now it feels able to stand upon its feet and assert its intention of living and growing, even though it may but toddle along, for a little time longer. Of course with an increase of size, it will display an enlarged appetite, not only for scientific and literary contributions, but also for the baser, but by no means less essential, sustenance of dollars and cents. We have, therefore, to announce that the price of this publication will now be raised to ONE DOLLAR per annum, in advance; Members of the Entomological Society of Canada, will still receive their copies gratis; the number of pages will also be increased from eight to at least twelve, and if sufficiently encouraged to sixteen.

We take this opportunity of tendering our best thanks to our many friends and correspondents for the kind encouragement, both in word and deed, that they have afforded to what appeared a presumptuous undertaking, and we earnestly hope that they will continue their valuable assistance during the time to come.

ENTOMOLOGICAL NOTES.

DESCRIPTIONS OF FOUR NEW SPECIES OF CANADIAN HYMENOPTERA.

BY E. T. CRESSON, PHILADELPHIA, PA.

GENUS EUCEROS, GRAY.

EUCEROS CANADENSIS, n. sp.—♀. Shining: head yellow, two spots behind antennæ, confluent with a mark on vertex covering ocelli and occiput, and tips of mandibles, black; antennæ black, palish at base beneath; thorax black, lateral margin of mesothorax in front of tegulæ, two lines on disk, a

spot on each side before scutellum, a broad V shaped mark on scutellum, apex of metathorax, which has two black spots above, anterior margin of prothorax, a spot on each side of pleura, and the tegulæ, yellow; wings hyaline, dusky on apical margin; legs yellow, anterior coxæ in front, posterior coxæ, their femora except base and apex, and their tibiæ except base, black, their tarsi except tips, fuscous; abdomen yellow; a triangular mark on each side of first segment, a transverse mark on each side of second and third segments, dilated laterally, and the remaining segments, except medial spot at tip of fourth segment, and another on extreme tip of abdomen, blackish; venter entirely yellow.—Length, $5\frac{1}{2}$ lines.

Hab.—Grimsby, Ont. Johnson Pettit, Esq., (Coll. Am. Ent. Soc.) One specimen.

EUCEROS COUPERII, n. sp.—♂. Shining; head yellow; extreme tips of mandibles, spot on vertex covering ocelli and occiput, black; antennæ fulvous, basal half fuscous within, scape black beneath, first eight joints of flagellum with a pale medial stripe, the dilated portion with a pale posterior margin; thorax black, two parallel stripes on disk of mesothorax, interrupted anteriorly, the lateral margin, broad in front, scutellum except sides and an acute mark at base, postscutellum, sides and apex of metathorax, pleura except a line beneath wings, and the tegulæ, yellow; wings hyaline, iridescent, apex fuliginous; legs yellow, posterior coxæ except tips and beneath, their femora except base and apex, and their tibiæ except base, black; abdomen ferruginous, basal segment yellowish, with a large triangular blackish mark on each side; remaining segments have each a small, lateral, black spot.—Length, $3\frac{1}{2}$ lines.

Hab.—Ottawa, Ont. (Coll. Wm. Couper, Esq.) One Specimen.

EUCEROS BURRUS, n. sp.—♀. Rufo-ferruginous, opaque; head black; orbits white, interrupted behind; spot on middle of face, clypeus and mandibles, pale fulvous; antennæ fulvous, scape blackish; prothorax, pleura beneath, and sutures of thorax, black; anterior and posterior margins of prothorax, and the tegulæ, white; legs entirely ferruginous, tarsi paler; wings hyaline, iridescent; abdomen shining at base and apex.—Length, 3 lines.

Hab.—Ottawa, Ont. Wm. Couper, Esq., (Coll. Am. Ent. Soc.) One specimen.

Of this interesting genus (in which the antennæ of the ♂ are broadly dilated and much flattened about the middle), there are seven species known to me as occurring in North America. They may be recognized by the following characters:

Thorax black and yellow:

Abdomen above black, banded with yellow; posterior legs black and yellow,

1. CANADENSIS, ♀

- Abdomen above rufous, basal segment black on each side; posterior legs black and yellow..... 2. COUPERII, ♂
- Abdomen above fulvous, varied with yellow; posterior legs fulvous and yellow,
3. THORACICUS, ♂
- Thorax above rufous:
- Abdomen entirely rufous; most of head and pleura beneath black; legs and antennæ fulvo-ferruginous..... 4. BURRUS, ♀
- Abdomen rufous, first three segments narrowly yellowish at tip; most of head, antennæ except tips, posterior tibiæ and tarsi at base, and lateral sutures of abdomen, black..... 5. FRIGIDUS, ♀
- Thorax above honey-yellow:
- Abdomen above honey-yellow, with large medial, transverse, yellow spots; thorax vittate with yellow; antennæ fuscous, pale at base..... 6. MEDIALIS, ♀
- Abdomen entirely pale honey-yellow; most of head and antennæ of ♀. black
7. FLAVESCENS ♀ ♂
- Nos. 1, 2 and 4 are from Canada; 3 from Connecticut; 5 from Maine; 6 from Massachusetts; and 7 from Connecticut and West Virginia.

GENUS MENISCUS SCHIÖDTE.

MENISCUS BETHUNEI, n. sp.—♀. Shining black; orbits, face except central black ridge, clypeus, mandibles except tips, annulus on antennæ, hooked mark on each side of mesothorax anteriorly, two short, nearly confluent lines on the disk, scutellum except central black line, three spots at base of methorax, a transverse line at tip and spot on each side, three spots on pleura, and triangular mark beneath just in front of middle coxæ, base of first, second and third abdominal segments, and the venter, white; antennæ long and slender; wings hyaline, iridescent, apex faintly dusky; legs honey-yellow, coxæ paler beneath, posterior tibiæ black, base pale honey-yellow, extreme base of their tarsi black, remainder yellowish-white; claws pectinated; metathorax opaque; abdomen polished.—Length $4\frac{1}{2}$ lines.

Hab.—Credit, Ont. Rev. C. J. S. Bethune. (Coll. Am. Ent. Soc.)
One specimen.

NOTES ON THE LARVA OF PYRAMEIS HUNTERA, SMITH.

BY W. SAUNDERS, LONDON, ONT.

Several years ago, my esteemed friend, Mr. D. W. Beadle, of St. Catharines, sent me specimens of this larva, which he had taken feeding on some species of *Gnaphalium*. No description was then taken, and the larva was not met with again until the present season, when I found it on the G. W. R. R. track, a mile east of London, feeding on *Gnaphalium polycephalum*. It had drawn the leaves together, and fastened them into a rude case with silken threads. The larva during its growth had consumed portions

of the inner surface of the leaves, especially near their summit, and hence, here the foliage was crisp and blanched. These whitened portions of the leaves, together with the size of the case occupied by the larva when full grown, enables the collector readily to discover their places of retreat.

On the 21st of June, I took three of them, two small and one full-grown each small one occupied the tip only of a leaf, the edges of which were drawn together and fastened with silken threads.

Description of full-grown specimen:—Length, 1-20 inches. Head, medium sized, bilobed, flat in front; black with a number of short, fine, pale brownish hairs.

Body above *alternately banded with rich, blackish purple, and yellowish, green.* The purple bands occupy the middle portion of each segment, and on these arise transverse rows of black branching spines—none on second segment—four spines each on third, fourth, and terminal segments—seven on each of the others. *On each side the dorsal line, from sixth to twelfth segments inclusive, is a round silvery white spot, set on the anterior edge of the purple bands.* The bands of yellowish green, which alternate with those of purple, are crossed by faint transverse lines of black—*anterior edge of second segment, brown—posterior portion, yellowish green crossed with faint black lines; there is also a fringe of whitish brown hairs, arising from small black tubercles crossing this segment just beyond the middle—Spiracles arge, dark brown, encircled with white.*

Under surface, dull purplish brown, with many very small dots of yellowish green—feet, black—prolegs, purplish brown.

Description of small specimen:—Length, 0-25 in. Head, medium size, black and shining.

Body above, dull reddish brown, and glossy, spines black, as in full-grown larva.—Under a magnifying power of 45 diameters, the white spots are very distinct, but are scarcely perceptible with an ordinary magnifying lens.

Under surface, similar to upper—feet, black.

LIST OF COLEOPTERA,

TAKEN AT GRIMSBY, ONTARIO, BY J. PETTIT

CICINDELIDÆ.

CICINDELA, *Linn.*
Sexguttata, Fab.
Limbalis, Klug.

Purpurea, Oliv.
Vulgaris, Say.
Duodecim-guttata, Dej.

Repanda, Dej.
Punctulata, Fab.

CARABIDÆ.

OMOPHRON, <i>Latr.</i>	DYSCHIRIUS, <i>Bon.</i>	LEBIA, <i>Latr. (continued).</i>
Americanum, <i>Dej.</i>	Globulosus, <i>Putz.</i>	Axillaris, <i>Dej.</i>
ELAPHRUS, <i>Fabr.</i>	CLIVINA, <i>Latr.</i>	Fuscata, <i>Dej.</i>
Cicatricosus, <i>Lec.</i> ¹	Rufescens, <i>Dej.</i> ⁵	DROMIUS, <i>Bon.</i>
Ruscarius, <i>Say.</i>	Cordata, <i>Putz.</i>	Piceus, <i>Dej.</i>
LORICERA, <i>Latr.</i>	SCHIZOGENIUS, <i>Putz.</i>	APRISTUS, <i>Chayd.</i>
*Neoscotica, <i>Lec.</i> ²	*Lineolatus, <i>Say.</i> ⁶	*Subsulcatus, <i>Chaud.</i>
NEBRIA, <i>Latr.</i>	BRACHINUS, <i>Web.</i> ⁷	METABLETUS, <i>Schmidt.</i>
Pallipes, <i>Say.</i>	*Americanus, <i>Lec.</i>	Americanus, <i>Schaum.</i>
NOTIOPHILUS, <i>Dumeril.</i>	ballistarius, <i>Lec.</i>	BLECHRUS, <i>Motsch.</i>
*Semistriatus, <i>Say.</i>	Fumans, <i>Fab.</i>	*Linearis, <i>Schaum.</i>
Sibiricus, <i>Motsch.</i>	Cordicollis, <i>Dej.</i>	CYMINDIS, <i>Latr.</i>
CALOSOMA, <i>Fabr.</i>	GALERITA, <i>Fab.</i>	Reflexa, <i>Lec.</i>
Scrutator, <i>Fabr.</i>	Janus, <i>Fab.</i>	Pilosa, <i>Say.</i>
*Willcoxi, <i>Lec.</i>	CASNONIA, <i>Latr.</i>	Americana, <i>Dej.</i>
Frigidum, <i>Lec.</i> ³	Pensylvanica, <i>Dej.</i>	*Neglecta, <i>Hald.</i>
Calidum, <i>Fab.</i>	PLOCHIONUS, <i>Dej.</i>	AXINOPALPUS, <i>Lec.</i>
CARABUS, <i>Linn.</i>	*Timidus, <i>Hald.</i> ⁸	Biplagiatus, <i>Dej.</i>
Limbatus, <i>Say.</i>	LEBIA, <i>Latr.</i>	CALLIDA, <i>Dej.</i>
*Sylvosus, <i>Say.</i> ⁴	Atriventris, <i>Say.</i>	Punctata, <i>Lec.</i>
CYCHRUS, <i>Fab.</i>	*Viridipennis, <i>Dej.</i>	CALATHUS, <i>Bon.</i>
Lecontei, <i>Dej.</i>	Viridis, <i>Say.</i>	Gregarius, <i>Say.</i>
*Brevoorti, <i>Lec.</i>	Pumila, <i>Dej.</i>	*Opaculus, <i>Lec.</i>
	Scapularis, <i>Dej.</i>	Impunctata, <i>Say.</i>

(To be continued.)

MISCELLANEOUS NOTES.

CAPTURES.—On June 23, while walking on William Street, Toronto, I captured a fine specimen of *Parthenos nubilis*; not having a box, I was compelled to imprison it in a roll of paper. Just as I got to Yonge Street, out got my friend, and it was not until after a long and exciting chase that I

* Species marked with an asterisk have not been before included in the list of Canadian Coleoptera.

¹ Found under moss and bark of old logs in swamps.

² A single specimen picked up on the shore of Lake Ontario.

³ Not uncommon on trees, where it feeds upon the canker-worm.

⁴ Taken in August and September under logs in open woods.

⁵ Under bark of old logs.

⁶ Occurs under stones at the margin of a creek.

⁷ The species of *Brachinus* are inserted with some diffidence, as Dr. Horn is now preparing a revision of the genus, and has a number of the writer's specimens under consideration.

⁸ Under bark of maples in winter.

finally secured it in a door-way, much to the astonishment of the surrounding public, who evidently thought me an escaped lunatic, and did not seem one whit the wiser when I informed them of the name of my prize. I also took recently a specimen of that pretty and rare beetle *Gnorimus maculosus*.—E. B. REED, London, Ont.

LONDON BRANCH.—You will be glad, Mr. Editor, to learn that Entomology is still progressing with us, and that it has lately obtained a start in a fair and fresh field. The Head Master of Hellmuth College, the Rev. A. Sweatman, has procured a cabinet for the school, and is giving every encouragement to the boys to take an interest in the science; and a New York gentleman, Mr. Gordon, the father of one of the pupils, has very liberally offered two prizes for the best collection of specimens procured during the holidays, and to be presented to the College cabinet.—E. B. REED, London, Ont.

BOOKS RECEIVED.

The Lepidopterist's Guide, intended for the use of the Young Collector, containing full instructions for the Collecting, Management, Observation, and Preservation of Lepidoptera, in all their stages. By H. Guard Knaggs, M.D., F.L.S. London: Van Voorst, Paternoster Row, E. C. (Price, 1s. 6d. stg.)

We have, time and again, recommended our readers and correspondents to procure Dr. Packard's *Guide*, and we hope that most of them have invested in it by this time: we now advise such of them as collect Lepidoptera to lay out a little more of their hard cash in the purchase of Dr. Knaggs' *Guide*, for though both are 'guides,' and trust worthy ones too, they do not pull in opposite directions, but lead the faithful follower to a very fair knowledge of Entomology. The work before us, whose title we have given in full above, while modestly put forth as for the use of *young* collectors, is one from which very few old hands would not learn a good deal well worth knowing; it is, indeed, if not the best, at any rate one of the best, manuals of practical instruction in a particular branch of natural history that has ever been published. Full and clear instructions are given for first getting hold of and then looking after and taking care of Lepidoptera in every stage of their existence, from the new laid egg to the perfectly developed fly. From being a book of *instructions*, some may think that it must be a pretty dry sort of affair—like, for instance, the drill books at the Military School—but we can assure them that it is quite the reverse, being really most interesting and amusing; some parts of it would even entertain the only too numerous individuals who do not know a bug from a butterfly!

Proceedings and Transactions of the Nova Scotian Institute of Natural Science. Vol. ii., part ii., 1867-8. Halifax, N. S. : W. Gossip.

We cannot but congratulate our Sister Province, far away by the sea, on its enterprising and valuable Institute of Natural Science, which, judging from its published transactions, and the interesting newspaper reports of its meetings, is doing a good and useful work. The volume before us, though certainly rather late in its appearance, contains many valuable and interesting papers on various branches of natural science, especially on the marine fauna and mineralogy of the country.

Address to the Members of the Tyneside Naturalists' Field Club. By the President, the Rev. Angus Bethune, M.A., delivered at its 22nd Anniversary Meeting.

Hardwicke's Science Gossip. London, Eng., June and July, 1869.

Newman's Entomologist, No. 66. From Mr. Reeks.

Le Naturaliste Canadien. Quebec. No. 7, June, 1869.

The American Agriculturist. New York. July, 1869.

The American Entomologist. St. Louis, Mo. July, 1869.

The Canada Farmer. Toronto. June, 1869.

The Maine Farmer. Augusta, Me.

The Weekly New York Sun. New York.

INDEX TO VOL. I.—We purpose issuing a title page and index to the first volume of the *Canadian Entomologist*, which this number completes, with our issue of next month, the first of the new volume.

DONATIONS.

We beg to acknowledge with grateful thanks the following donations to the Entomological Society of Canada:—

To the *Publication Fund*, the sum of two dollars from W. Saunders, Esq., London, Ont.

To the *Library*, ten octavo and six quarto pamphlets, from J. L. LeConte, Esq., M.D., Philadelphia, containing a large number of his valuable monographs and papers on Coleoptera, published in various scientific periodicals. A most useful and acceptable addition to the Library of the Society.

TO CORRESPONDENTS.

SUBSCRIPTIONS RECEIVED.—To Vol. I., from J. M. C., Newport, Vt. (Your letter of April 16 did not reach us till June 17! Have sent back Nos. and ordered *Am. Ent.* for you.) To end of No. 9, Vol. II. from T. L. M., New York. To Vol. I., from Dr. W. W. B., per Studley & Co.

EXCHANGES.—The Rev. F. O. Morris, Nunburnholme Rectory, Hayton, York, Eng., writes that he sent in March last a box of British insects to Dr. Butterfield, of Indianapolis, Ind., per the Smithsonian Institution, but has since heard nothing further respecting them; he now desires to know whether Dr. B. ever received them or not, and if so, begs him to return the box full of American specimens, and he will send it back again with a fresh lot of British ones.

[We have recently been informed that Dr. B. has removed to Sancta-Clara-on-Guadalupe, California, and probably has not received the specimens, as the Smithsonian Institution only makes distributions of packages at certain periods of the year.—ED. C. E.]

J. P. B. H., Boston, Mass.—Have written to the author for the information you desired.

F. W., Wanstead, Eng.—C. B. M., Lep. Heteroc., parts xvi., xviii., and xix., received; very many thanks. The following are the new species described in Riley's First Report:—Lepidoptera, *Agrotis Cochranii*, *A. scandens*, *Penthina vitivorana*, Packard; *Aplodes rubivora*, *Pempelia grossulariæ*, Packard; *Anchylopera fragariæ*, Walsh & Riley; *Gelechia gallæ-solidaginis*, *Pterophorus carduidactylus*; Coleoptera, *Madarus vitis*; Diptera, *Lydella doryphoræ*, *Pipiza radicum*, *Anthomyia zeas*; Homoptera, *Eriosoma ulmi*; Hymenoptera, *Eurytoma Bolteri*, *Hemiteles*? *Cressonii*, *Microgaster gelechia*.

EXCHANGE.

HEMIPTERA.—I should be glad to make exchanges with any one collecting Hemiptera,—an order that has hitherto been much neglected in this country,—or to give an equivalent in other orders for species from different parts of Canada.—JOHNSON PETTIT, Grimsby, Ont.

ENTOMOLOGICAL PINS.—The supply of pins has not yet arrived, but they are now on the way, and we expect them daily. We shall fill the orders we have received immediately upon their arrival. We cannot tell the exact price till we get the invoices.

TERMS OF SUBSCRIPTION to Vol. ii:—

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All communications, remittances, and exchanges should be addressed to

"THE REV. C. J. S. BETHUNE, Credit, Ont., Canada."

THE
Canadian Entomologist

— ♦ —
VOLUME I.
— ♦ —

EDITED BY THE
REV. C. J. S. BETHUNE, M.A.
SECRETARY TO THE
ENTOMOLOGICAL SOCIETY OF CANADA.



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